AMERICAN JOURNAL OF

PUBLIC HEALTH

and THE NATION'S HEALTH

Volume 42 MARCH, 1952 Number 3

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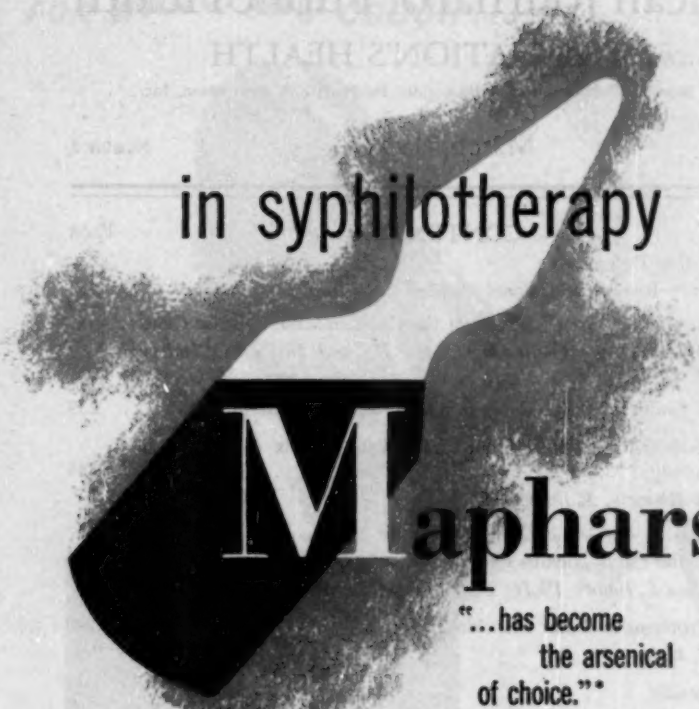

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Official Monthly Publication of the American Public Health Association, Inc.

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NOTICE:—Subscription $10.00 per year for United States, Cuba and Mexico, South and Central America; $10.50 for Canada; and $11.00 for other countries. Single copies $1.00 postpaid.

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Address correspondence regarding editorial contents and manuscripts to C.-E. A. Winslow, Dr.P.H. Editor, 1790 Broadway, New York 19, N. Y.

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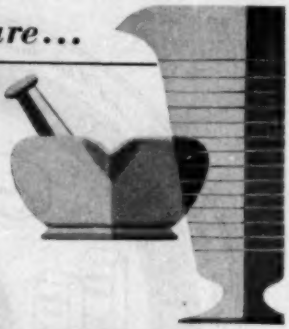

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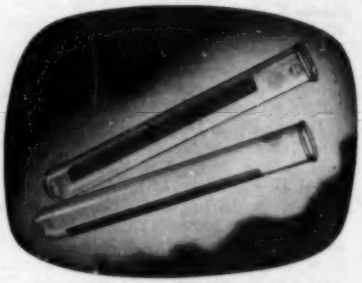

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1. Smith, J. M. Calcium needs of teen-age boys, Nutrition News, (April), 1947.

2. Kramer, M. N., Potter, M. T., and Gillum, I. Utilization by normal adult subjects of the calcium and phosphorus in raw milk and in ice cream. J. Nutrition *4*:105 (May) 1931.

3. Dahlberg, A. C. and Loosli, J. K. Nutritive value of commercial ice cream. J. Am. Diet. Assn. *24*:20 (Jan.) 1948.

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1. Brittain, C.; Fishman, I. M., and Laurens, S.: *Transactions New York Acad. Sc.*, *13*:61, Nov., 1950.

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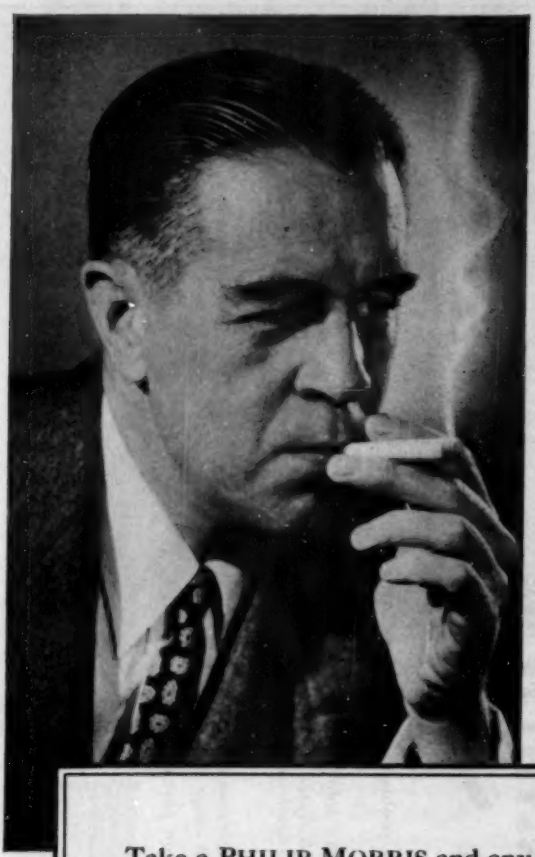

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The array of data listed below gives the approximate amounts of essential minerals provided by muscle meat when seven ounces per day are consumed.[1] The minerals include those now known to be essential components of the human organism—the skeletal framework and teeth, soft tissue structures including blood, and substances concerned in regulatory functions.

APPROXIMATE MINERAL CONTENT OF MEATS

200 Gm. (approx. 7 oz.),[1] Edible Portion (Uncooked)

	Beef Round	Lamb Leg	Pork Loin	Veal Shoulder
Minerals, total[2]	2.0 Gm.	1.8 Gm.	1.8 Gm.	2.0 Gm.
Calcium[3]	22 mg.	20 mg.	20 mg.	22 mg.
Chlorine[3]	147 mg.	136 mg.	125 mg.	147 mg.
Copper[3]	0.2 mg.	0.2 mg.	0.2 mg.	0.2 mg.
*Iodine[4] (Ohio animals)	0.02 mg.	0.03 mg.	Data not available	0.01 mg.
Iron[3]	5.8 mg.	5.4 mg.	5.0 mg.	5.8 mg.
Magnesium[3]	46 mg.	42 mg.	39 mg.	46 mg.
Phosphorus[3]	360 mg.	426 mg.	372 mg.	398 mg.
Potassium[3]	661 mg.	610 mg.	559 mg.	661 mg.
Sodium[3]	164 mg.	152 mg.	139 mg.	164 mg.
†Cobalt[3]	0.0002 mg.	———	Data not yet available	———
†Manganese[3]	0.03 mg.	0.03 mg.	0.02 mg.	0.03 mg.
†Zinc[3]	9.4 mg.	———	Data not yet available	———

*Iodine content of meat varies with the iodine content of feed of the animals.
†Needed in trace amounts only.

The average values for iron, phosphorus, and copper of the four kinds of meat shown constitute about 46, 25, and 100 per cent, respectively, of the National Research Council's recommended daily allowances for adults, and the average values for chlorine, potassium, and sodium constitute about 14, 63, and 16 per cent, respectively, of the estimated daily adult needs, as based on mineral balance studies.[6] Although no specific information is available on the quantitative needs for cobalt, magnesium, manganese, and zinc, nutrition information would suggest that the amounts reported above have nutritional importance or significance.

In addition to its notable content of essential minerals, meat also furnishes large amounts of biologically complete protein and important amounts of vitamin B complex, which includes biotin, choline, folic acid, inositol, niacin, pantothenic acid, pyridoxine, riboflavin, thiamine, and vitamin B_{12}. On the basis of its rich contribution of nutritional essentials, meat well deserves its prominent place in the daily diet of the American people, the world's best-nourished people.

1. Recent estimates of the U. S. Department of Agriculture indicate that the per capita consumption of meat in the United States approaches seven ounces per day.
2. Watt, B. K., and Merrill, A. L.: Composition of Foods—Raw, Processed, Prepared, In Agriculture Handbook No. 8, United States Department of Agriculture, 1950.
3. Estimated on basis of protein content of meats. Sherman, H. C.: Food Products, ed. 4, New York, The Macmillan Company, 1948, p. 155.
4. Ohio animals; varies with iodine content of feed. Johnson, H. J.: Bridges' Dietetics for the Clinician, ed. 3, Philadelphia, Lea & Febiger, 1949, p. 800.
5. Mitteldorf, A. J., and Landon, D. O.: Analytical Chemistry; Spectrochemical Analysis of Beef for Mineral-Element Content, Armour Research Foundation of Illinois Institute of Technology. In Press.
6. Dauphinee, J. A.: Sodium, Potassium, and Chloride Malnutrition, Including Water Balance and Shock, in Jolliffe, N.; Tisdall, F. F., and Cannon, P. R.: Clinical Nutrition, New York, Paul B. Hoeber, Inc., 1950, p. 341.

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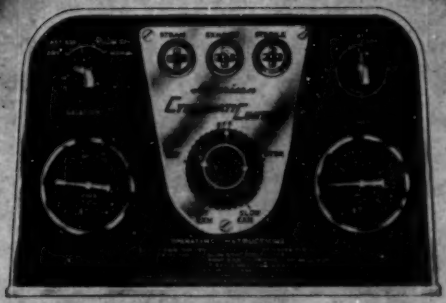

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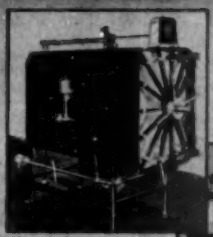

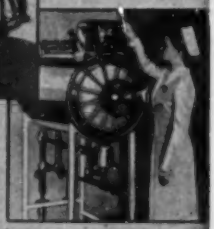

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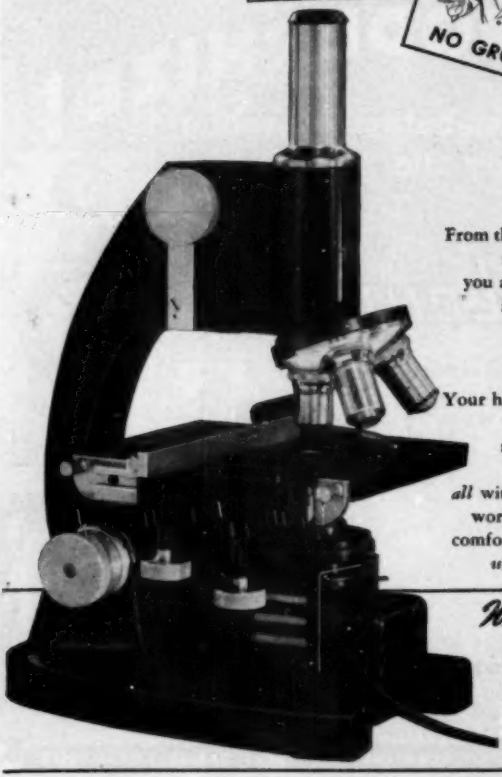

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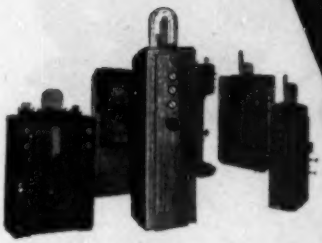

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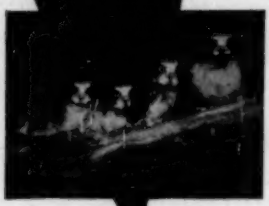

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American Journal of Public Health
and THE NATION'S HEALTH

Volume 42 March, 1952 Number 3

Biological Warfare Defense*

1. Introductory Remarks

COLONEL WILLIAM L. WILSON, M.D., M.P.H., F.A.P.H.A.
Assistant Administrator, Health and Welfare Office, Federal Civil Defense Administration, Washington, D. C.

BIOLOGICAL warfare or "BW" is not new! It has been going on since time began. The well known host-parasite relationships have been progressing throughout the ages. Biological warfare defense is not a new subject either.

This type of warfare, so widely popularized today as a new subject, is one which we propose to clarify from the civil defense viewpoint. It is only one type of warfare against which civil defense plans are required as man tries to direct one species against another to the advantage of the offensive user and to the disadvantage of the intended victim. The surest defense against biological warfare is man's own effort.

To show that biological warfare and defense against it are not new, one need only recall a system used by Hannibal against the Romans. Perhaps that was the ultimate in size of BW organism, when Hannibal's elephants came charging down upon the Roman legions and trampled them into the earth. The Romans learned to overcome those biological agents directed against them. Witness the use of a later similar but much more rapid, if smaller, organism for attack. It was devised by Genghis Khan whose cavalry horses overran the best ground armies and the populations of many nations.

Today a biological warfare campaign against a nation or its people, or its essential animals or crops, would be likely to employ the smallest and most elusive organism available, perhaps a virus, and one which could be introduced with more deception than were Hannibal's elephants or Genghis Khan's horses. The principles of offense and defense would apply, however. Naturally the smaller the biological organism directed against us, the more difficult it might be to detect. Surely the identification would be a longer and more difficult process! Once identified, reporting of the agent and the marshaling of defenses against it should be much more rapid than in days gone by, and in our modern civilization the defense measures certainly could be more effective from the earliest attacks, provided we undertook our problems energetically, prepared for them intelligently, and deployed the means for defense promptly.

* Presented before a Joint Session of the Epidemiology, Engineering, Health Officers, and Laboratory Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

Perhaps the matter of security classifications will bother us less and less as we appreciate those facts.

Biological warfare defense is energetic public health practice. Surely we may gain confidence, without being overconfident, as we listen to the expert tell us how much he knows about potential agents of biological warfare. We must accept with calm reassurance the fact that many, if not most, of the agents potentially hazardous to man, animals, and plants can be detected, identified, and successfully combated, even if man uses every device he can develop for directing the agents against us. Surely all of us now realize that if we really desire to do so, we can achieve epidemiological investigations which will protect our populations and we can report them promptly and effectively.

Finally, we must agree that we have come a long way toward the goal of means for overcoming any biological agent directed against us, if we will but prepare intelligently and effectively for that.

There is one thing I feel we should stress so firmly that it cannot be forgotten. As we have been hearing about civil defense against biological warfare, all of us must have thought that the real defense successes will come from a maximum utilization of those resources which exist, which are available to us now, and can be relied upon provided we improve and manage them adequately. The interrelationships and mutual supports between federal and state and other governmental and professional agencies and groups should be clearly recognized. While civil defense must coördinate and assure all of the defense measures required to be used against biological warfare, the various essential services are available. Representatives of important segments of the Public Health Service will provide one of our main defense lines against biological warfare. You have heard also of the United States Department of Agriculture's Animal and Plant Disease Control agencies, and of the Department of Interior's Fish and Wildlife Service. We realize and appreciate the necessity for us to use most intelligently the vast and marvelous resources we have in our country today. We appreciate the vast advantages which can accrue to our populations and to our efforts in such a biological warfare defense. On the other hand, a very great deal depends upon individuals, each doing his part.

We believe that civil defense authorities will be able to furnish the guidance required to achieve the desired goals. We know they can do so with modest additional research upon aspects not known sufficiently. All of you may be of aid in persistent demands for limited but necessary research into important aspects of biological warfare, insufficiently understood, "for purposes of defense."

Biological Warfare Defense*

2. The Epidemic Intelligence Service of the Communicable Disease Center

ALEXANDER D. LANGMUIR, M.D., M.P.H., F.A.P.H.A., AND JUSTIN M. ANDREWS, Sc.D., F.A.P.H.A.

Chief, Epidemiology Branch; and Officer in Charge, Communicable Disease Center, Public Health Service, Federal Security Agency, Atlanta, Ga.

BIOLOGICAL warfare involves the purposeful creation of epidemics by enemy action. Two major forms of possible attack have been outlined in the manual, *Health Services and Special Weapons Defense*, published in December, 1950, by the Federal Civil Defense Administration. These are: (1) the dissemination of clouds of pathogenic aerosols over cities, and (2) the clandestine contamination of water and food supplies or the air of strategic buildings. The former type of attack would be designed to produce large numbers of casualties in urban areas or other areas of massed populations. The latter would be directed at localized groups to incapacitate or kill key individuals, to disrupt essential industry, or to create hysteria and undermine public morale. Whatever the form of biological warfare, its object would be to create epidemics among those exposed.

A number of specific disease agents might be used. The popular pamphlet, *What You Should Know About Biological Warfare*, also published by the Federal Civil Defense Administration, mentions botulinus toxin and the agents causing plague, typhus, cholera, smallpox, tularemia, brucellosis, anthrax, and glanders. Others have been suggested. Informed individuals will differ over the relative effectiveness of these agents, but it is a foregone conclusion that, if an enemy chooses to use biological warfare against us, he will expect to produce epidemics. Epidemiology is, therefore, basically involved in defense against biological warfare.

In the event of a successful large-scale attack, all community resources will be needed to cope with its effects. Sound organization can do much to abort the attack or mitigate its serious consequences. To achieve such organization, careful planning and intensive training are necessary. The greatest body of competence to lead in such activities lies in the existing official health services, local, state, and federal. The *Civil Defense Manual* states, "The defensive organization is already in existence (in our health departments) and needs only modification to meet unnatural outbreaks of disease." This modification involves augmented epidemiologic facilities.

The Communicable Disease Center of the U. S. Public Health Service, with its officially constituted responsibilities of rendering epidemic and disaster aid services, has been acutely aware of some of the problems that would emerge in the event of biological warfare attacks against this nation. In planning a re-

* Presented before a Joint Session of the Epidemiology, Engineering, Health Officers, and Laboratory Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

orientation of its normal program to meet more adequately these defense needs, one urgent problem arises, namely, the dearth of trained epidemiologists. This dearth exists even in peacetime. Defense needs exaggerate this deficiency. In an effort to correct this present personnel shortage the Epidemic Intelligence Service has been organized.

The ultimate objective of this program is to promote a wider understanding and appreciation of epidemiologic approaches to the problem of disease control in peace or war. An immediate necessity in the present emergency is the provision of adequate epidemiologic facilities to investigate outbreaks of disease in strategic areas. A broader but equally pressing need is to make available competent epidemiologists to assist in the planning and organization of the total civil defense program at all levels. It is obvious that a substantial increase in the number of trained and experienced epidemiologists will be required to achieve such objectives.

To visualize more clearly the need for epidemiologists in the civil defense organization, let us outline the events which might follow a biological warfare attack. The basic pattern of this plan has been succinctly stated in the *Civil Defense Manual.*

Let us assume that enemy planes succeeded in penetrating our military defenses and that a cloud of infectious aerosol had been laid down upon an unprepared and unsuspecting city. Let us further assume that the concentration of the agent in the cloud was sufficient to produce casualties among those directly exposed. What would be the ensuing course of events? Days or weeks later cases of disease would appear. The incidence would rise and then fall over the normal span of the incubation period. They would occur without apparent relationship to each other but might be concentrated in certain areas of the city, depending on the meteorologic conditions determining the distribution of the cloud.

Medical care facilities would be grossly overtaxed early in the epidemic. Emergency medical services would have to be organized as rapidly as possible. Laboratories would be swamped with specimens, but except in few places personnel and facilities would be grossly unprepared to provide a prompt specific diagnosis. Depending on the agent used in the attack, it might be days or weeks before an etiologic identification could be made.

Without the benefit of specific diagnosis, antimicrobial drugs would be used indiscriminately and in widely varying dosages. By trial and error, physicians would learn which drugs, if any, were the more effective; but in the process many casualties would not receive the correct therapy. Stocks of pharmaceuticals would become rapidly depleted. Strict rationing would be imperative to forestall a temporary black market.

Early in the epidemic, fear, resulting from lack of understanding and poor public information services, might well lead to hysterical reactions on the part of private citizens and public officials. The contagiousness of the disease would be questioned. Rigid isolation and quarantine measures might be imposed that would be hopeless to enforce. A mass exodus from the city might well get started. Confusion would abound, and the consequences would be disastrous.

Let us contrast this hypothetical situation with another in which the defense organization was adequately prepared. Suspicion of the biological warfare nature of the attack would be immediate from the examination of bomb fragments and duds. The extent and concentration of the cloud would be determined from the specimens collected by the air sampling grid which would commence

operation at the moment the air raid alarm sounded. An alert local laboratory would immediately institute a series of tests designed to identify the specific agent. The time required to do this would vary widely with different agents, but for some, such as those of plague, tularemia, and brucellosis, present methods if used efficiently would give the answer prior to the onset of the first cases. Armed with this information, physicians could institute appropriate treatment without delay.

If detection methods were too slow, as might occur with certain viruses or rickettsiae, the first cases would appear without advance knowledge of the specific nature of the attack. However, through a sound intelligence system, based on prompt morbidity reporting, the beginning of the epidemic might well be appreciated hours or even days before it was clearly apparent to any single physician or hospital. The extent of the problem could be defined rapidly; new problems would be recognized promptly. Such intelligence should be the basis for guiding administrative activities.

A special diagnostic consultation service would be called into action immediately. Intensive etiologic studies would be instituted in local laboratories and, when indicated, by collaborators in the Sectional Research Program of the National Institutes of Health. Speed in achieving a specific diagnosis would make possible prompt therapy with the appropriate antimicrobial drugs, thereby reducing the severity and duration of casualties and conserving precious supplies.

Carefully planned public information services would keep the citizens informed of the true facts, of the measures being taken, and of each individual's responsibilities. A practical plan to isolate cases could be instituted, if necessary, and a large measure of voluntary compliance by the public would probably be achieved. While an attack on such a prepared city might still have serious consequences, there would be order in the control procedures. Substantial savings would be effected in the number of fatalities and the duration of disability.

The contributions the epidemiologist can make in this defense plan are evident. His competencies are needed to modernize the existing morbidity reporting services and to develop more comprehensive and sensitive indices of morbidity. He should direct and promote the wide use of skilled consultation services for the clinical examination of problem cases, for the effective use and correct interpretation of laboratory tests, and for advice to the general practitioner regarding appropriate therapy. The decision whether or not to invoke isolation and quarantine measures should be made on the recommendation of the epidemiologist.

Let us now visualize the problems that might be encountered in surreptitious attacks. Here the opportunities are so manifold as to defy classification or generalization. The detection and control of saboteurs are responsibiilities of the FBI, but the recognition of epidemics caused by sabotage is peculiarly an epidemiologic function. There can be no warning of clandestine attacks. The first indication would be the occurrence of cases. Epidemiologic investigation would reveal a common source or a common place of exposure. By thorough study and analysis, it should be possible to determine rapidly and with considerable precision the nature of the introduced pathogen, the exact time of exposure, and the method of dissemination. Such information, or intelligence, should constitute a substantial body of clues to aid the FBI in apprehending the saboteurs. Therefore, any plan of defense against biological warfare sabotage requires trained epidemiologists, alert to all possibilities and available for call at a moment's notice anywhere in the

country. To achieve the desired mobility, the activities of these epidemiologists should be coördinated by a logical federal agency. They must be immediately available, however, to any state or local health department in need. One of the primary purposes of the Epidemic Intelligence Services of CDC is to recruit and train such a corps of epidemiologists.

This enterprise is already under way. An initial group of 21 medical officers has been recruited and commissioned. Beginning in July, 1951, they received a condensed course in epidemiology, biostatistics, and public health administration as it relates to communicable disease control. At the conclusion of this experience, they were assigned to selected field training areas throughout the country. This general procedure will be repeated as opportunity permits. Active recruiting of another group is now under way.

As a result of their experience, many of these officers may well remain in full-time epidemiology or other public health pursuits at federal, state, or local levels. Some, no doubt, will return to civilian, academic, or clinical practice, but in the event of war they could be returned to active duty with the Public Health Service and assigned to strategic areas to fulfil the functions for which they were trained. Even if the epidemic intelligence officers are never needed to counter biological warfare attacks, this program will have fulfilled its ultimate objective of contributing measurably to the understanding and appreciation of epidemiologic approaches to the control of communicable disease.

The word "intelligence" has been chosen advisedly to describe this program. Webster's *Dictionary* gives us these definitions:

1. The capacity for knowledge and understanding.
2. The power of meeting a novel situation successfully by adjusting one's behavior to the total situation.
3. The ability to apprehend the interrelationships of presented facts in such a way as to guide action toward a desired goal.
4. The obtaining and dispensing of information, particularly secret information.

Both in the limited military sense and in the broader, more general application this word seems to be singularly appropriate in defining the contributions of epidemiologists in peace and war.

Biological Warfare Defense*

3. The State Sanitary Engineer's Viewpoint

JOHN M. HEPLER, C.E., F.A.P.H.A.

Director, Division of Engineering, State Department of Health, Lansing, Mich.

THE process of biological warfare is no longer something mysterious. All it can possibly involve is the employment of "nature's infections and toxic weapons under willful control and direction." Our defenses are the same as have been used in epidemics of the past. All that the willful control and direction can do is to magnify the old problems tremendously. To substantiate that statement Dr. Langmuir reminds us that the *Civil Defense Manual* states: "The defensive organization is already in existence (in our health departments) and needs only modification to meet unnatural outbreaks of disease." Both he and others have indicated the modifications and weaknesses which need attention in our health departments. Dr. Leslie A. Chambers has bluntly asked the question "How well have we learned our lessons; how competent are we to counter an abruptly induced epidemic situation?"

It is good to note the recognition of the need for more information concerning the possibilities of the use of biologicals and the need for developing additional skills in recognizing them and their symptoms. It is good to note that CDC has already instituted training for epidemiologists so that unusual or abnormal conditions in the public's health may be more quickly recognized, and that laboratory personnel are working toward better, quicker, more accurate tests, so that diagnoses can be more promptly made.

These tests certainly will provide the background with which health departments can build their defenses. With such realistic investigation and preparation and the "resolute reconsideration of the sum total of free knowledge concerning epidemic situations, whether man-made or otherwise," which Dr. Chambers calls for, I can see no great problem confronting us as engineers.

The sanitation divisions of our health departments have always been the segment of the health department concerned with the environment, air, food, and water, which Dr. R. H. Flinn has indicated are the primary media through which attack may come. The prevention of disease by dusts, and the fumes, mists and vapors of toxic materials in the atmosphere of industrial workers, the prevention of water-borne disease by water treatment processes, and the prevention of disease by food and milk infections have been the stock in trade responsibilities of sanitation personnel. Under natural conditions we have done quite well. The problem as it is now reflected is that we have done so well that we have not had sufficient epidemics to keep us alert to the symptoms that accompany such outbreaks. We have had no opportunity, or need, to be especially alert to the epidemiology of such diseases. We have forgotten

* Presented before a Joint Session of the Epidemiology, Engineering, Health Officers, and Laboratory Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

that there is an epidemiological aspect to all of our work. In fact, sometimes I fear we have forgotten that we have epidemiologists in our health departments.

One of the first things we need to do in modifying our health departments to meet unnatural outbreaks is to reorient our sanitation personnel in epidemiological procedures and establish close liaison with the communicable disease control officer. This does not call for teaching these persons the symptoms and diagnostic clues to all the diseases that might occur through biological warfare, but certainly they should be trained to recognize and note the unusual, the casual, or even slight deviations from normal that might, when reported to the epidemiologist, mean much in analyzing a condition or recognizing the disease. In other words, the techniques of the shoe-leather epidemiologist must be known and used by the sanitarian.

Since early reporting is prerequisite to early recognition and establishment of our defense, those health workers closest to the population will be the first to hear of any changes occurring in the population or the environment. We will expect, therefore, that the nurse through her home visits, and the sanitarian through his routine visits to farms, homes, business establishments and other contacts, will be the first to hear about the headaches, the sore throats, the stomach upsets, the diarrheas, the unexplained changes in the actions of fowl or animals. These are the signs which must be reported to the epidemiologist. These may well be the signs that will alert us to an attack. They are the signs which must not be ignored or passed over lightly. Their importance must be recognized and reported. If laboratory specimens or samples are needed they should be taken immediately and the necessary data to start proper laboratory examination should accompany the specimen.

If corrective or protective measures can be instituted at the same time or immediately after reporting the symptoms, these same personnel are the logical ones to institute or direct the provision of such measures.

It is, therefore, in my opinion, our obligation as engineers to establish promptly training in fundamental epidemiology for all sanitation personnel so that no clues will be missed; that all of us in public health may be alert and be a real part of the defense team. How much epidemiology we should know, how much training we should provide will have to be determined largely by others, but whatever it may be, it is our duty to acquire that knowledge and use it. I am sure we can and will do it.

Coccidioidin Sensitivity Among School Children in Phoenix (Skin Test and X-ray Survey)*

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THE appellations "San Joæquin" and "Valley Fever" for a time not only signified the relatively benign, pulmonary disease caused by the fungus *Coccidioides immitis*,[1-4] but also defined its area of endemicity. Since that time the endemic area has been broadened to include much of the Southwestern United States[5-9] and the term coccidioidomycosis includes both benign and disseminated ("coccidioidal granuloma") forms of the disease.

In a stable population in an endemic area the problem of coccidioidomycosis is mainly a pediatric one, exposure and the development of immunity having rendered adults nonsusceptible. In migratory populations and in resort areas, however, the problem may also involve adults, as was evidenced by the experience of large numbers of susceptible military personnel brought into endemic areas during the recent war.[10-12]

The present paper reports for the first time data regarding sensitivity to coccidioidin, analyzed according to age, sex, nationality, length of residence, and school attended, for a group of "normal" children living in the endemic area of Phoenix, Ariz.

MATERIAL AND METHODS

One thousand, eight hundred and sixty-nine grade school children ages 5 to 17 were skin-tested for sensitivity to coccidioidin and tuberculin, and all positive reactors and a group of 228 negative controls received photofluorographic (70 mm.) chest films. The children were pupils of three city schools unselected beforehand for any specific factors. But School C was located in an unpaved, hence dustier, area of the city than Schools A and B, which were located in paved areas. The children compose two large nationality groups, which are classified as American and Spanish-American. A group of 13 American Indians and Chinese make up the total. Seventy-two adults were skin-tested and revealed 51 per cent positive reactors to coccidioidin, which figure is used only for comparison.

Coccidioidin 1:100, as recommended and graciously supplied by Dr. C. E. Smith,[13] and tuberculin 1:10,000 (O.T.), were used as antigens, with 0.1 ml. of each injected intradermally into the left and right forearms respectively. Conspicuously differentiated, separate sets of new tuberculin syringes and needles were used for each antigen. The schools were tested in alphabetical order at one week intervals and all tests and readings were done by the same person. Reactions which presented an area of reddened induration more than 5 mm. in diameter at the end of 48 hours were considered positive.[14] Only four severe

* Presented before the Epidemiology Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 2, 1951.

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reactions occurred, and these responded well to the use of a sling for the involved arm and to the application of warm wet dressings.

RESULTS

Of the total tested, 794 (42 per cent) revealed positive skin reactions to coccidioidin. There was no statistically significant difference between the sexes. The Spanish-American children, with 61 per cent positive reactors, were significantly higher than the American children, with 39 per cent. Table 1 presents the data analyzed according to age, nationality, and school attended. Sensitivity to coccidioidin as revealed by a positive skin test is observed to increase with increase in age for both nationalities and in all schools. It will be noted that School C reveals consistently higher percentages of positive reactors for each nationality than either of Schools A or B, and this difference is significant. The difference between Schools A and B is not significant and they have been combined.

The data in Table 1 represent both lifetime and non-lifetime residents combined. Since the latter groups include migrants from both endemic and nonendemic areas, the effect of residence in the endemic area of Phoenix can be examined more clearly by analyzing the lifetime residents alone, as is done in Table 2. Lifetime residents are defined as those who have spent all, or all of their lives with the exception of not more than 6 months, in Phoenix. Age and length of residence for this group are, of course, essentially identical. Figure 1 illustrates the increase in percentages of positive reactors that occurs with increasing length of residence in Phoenix, and compares the nationalities and schools. It will be noted that the differences between the nationalities are less and that the curves tend to coincide.

Comparison of lifetime with non-lifetime residents in the same age and resi-

TABLE 1

Reactors to Coccidioidin, Grade School Children, Phoenix, Ariz., 1951, by Age, Nationality, and School

		American					*Spanish-American*				
Ages	*Schools*	*A*	*B*	*C*	*A and B*	*Totals (A B C)*	*A*	*B*	*C*	*A and B*	*Totals (A B C)*
5– 6	Positive	5	11	27	16	43	0	1	7	1	8
	Tested	17	75	91	92	183	2	4	19	6	25
7– 8	P	20	29	63	49	112	3	5	18	8	26
	T	74	139	141	213	354	8	16	34	24	58
9–10	P	17	48	69	65	134	6	6	18	12	30
	T	72	154	140	226	366	8	12	29	20	49
11–12	P	32	12	93	44	137	6	5	30	11	41
	T	104	33	140	137	277	14	7	40	21	61
13–14	P	49	—	88	49	137	13	2	55	15	70
	T	163	—	123	163	286	28	2	72	30	102
15–16	P	4	—	18	4	22	8	0	26	8	34
	T	21	—	28	21	49	14	0	32	14	46
						Per cents Positive					
5– 6		29.	15.	30.	17.	23.			37.	—	
7– 8		27.	21.	45.	23.	32.			53.	33.	
9–10		24.	31.	49.	29.	37.			62.	60.	
11–12		31.	36.	66.	32.	49.			75.	52.	
13–14		30.	—	71.	30.	48.			76.	50.	
15–16		19.	—	64.	19.	45.			81.	37.	
						Totals					
	Positive	127	100	358	227	585	36	19	154	55	209
All ages	Tested	451	401	663	852	1,515	74	41	226	115	341
	% Positive	28.	25.	54.		39.	49.	46.	68.	48.	61.

TABLE 2

Reactors to Coccidioidin, Grade School Children, Phoenix, Ariz., 1951, Lifetime Residents, by Age, Nationality, and School

		American			*Spanish-American*		
Ages	*Schools*	*A and B*	*C*	*Totals*	*A and B*	*C*	*Totals*
5– 6	Positive	11	16	27	1	6	7
	Tested	54	47	101	3	14	17
7– 8	P	17	32	49	5	12	17
	T	83	80	163	12	23	35
9–10	P	29	29	58	8	12	20
	T	87	52	139	15	19	34
11–12	P	13	30	43	5	16	21
	T	30	42	72	11	24	35
13–14	P	17	27	44	10	28	38
	T	37	35	72	20	38	58
15–16	P	2	4	6	3	16	19
	T	4	6	10	8	20	28
				Per cents Positive			
5– 6		20.	34.	26.	—	43.	41.
7– 8		20.	40.	30.	41.	52.	49.
9–10		33.	56.	42.	53.	63.	59.
11–12		43.	71.	60.	45.	66.	60.
13–14		46.	77.	61.	50.	74.	65.
15–16		—	—	60.	—	80.	68.
				Totals all Ages			
	Positive	89	138	227	32	90	122
All ages	Tested	295	262	557	69	138	207
	% Positive	30.	53.	40.	46.	65.	59.

dence groups reveals no significant difference between them, nor does comparison of 5–11 year olds with 11–17 year olds of the same length of residence in Phoenix. It is apparent, therefore, that length of residence in the endemic area governs sensitivity to coccidioidin and the increase associated with increase in age is a reflection of this fact.

X-RAY RESULTS

The 70 mm. chest films revealed no cases of active pulmonary disease or cavitation. A dozen children were recommended for larger films and/or 6 month follow-up. All films were read by an experienced radiologist who was unaware at the time of reading which films were those of positive reactors to the skin tests. The 228 negative controls were read, in addition, by another radiologist and by an internist. Only when all three readers agreed on the presence of pulmonary calcification in these films was such calcification tallied. Accordingly, 13 per cent of the positive skin test reactors and 14 per cent of the negative controls presented evidence of pulmonary calcification.

Regarding the skin tests with tuberculin a total of 312, or 17 per cent, were positive reactors. The percentages positive increased with increase in age for both nationalities alike.

DISCUSSION

The gross data in Table 1 show differences between Americans and Spanish-Americans which refinement largely eliminates. Taking into account the smaller numbers of Spanish-Americans leads us to conclude that the differences between the groups are more apparent than real and do not represent a real nationality difference but rather a hidden correlation of exposure.

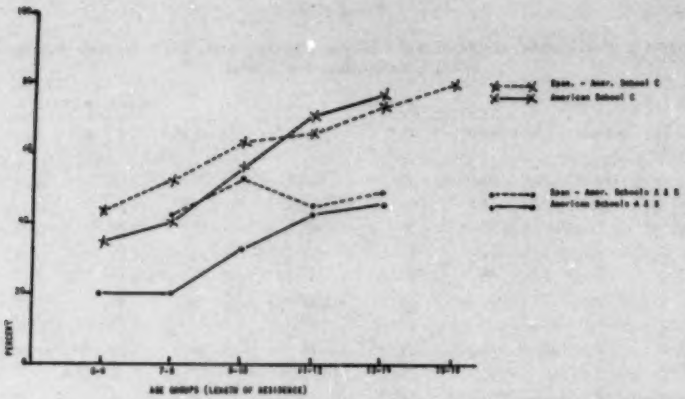

FIGURE 1—Positive Reactors to Coccidioidin. Grade School Children, Lifetime Residents, Phoenix, Ariz., 1951 Comparison by Age, Nationality, and School.

The significantly higher percentages of positive reactors in School C is most reasonably accounted for by the fact that the children attending it live in an unpaved, dustier section of the city. The reduction in the incidence of infection that has been achieved by dust control as reported by Dr. C. E. Smith substantiates this view.

Our data do not inform us as to loss of sensitivity to coccidioidin, although the gross data show a decrease in the oldest age group.

The fact that 14 per cent of the children negative to both coccidioidin and tuberculin presented evidence of pulmonary calcification on the 70 mm. photofluorograph suggests the possibility that the calcification is due to histoplasmosis. Some of these children were migrants from areas where this disease occurs. However, they were not tested for sensitivity to histoplasmin.

SUMMARY

The findings of a survey of 1,869 Caucasian school children between the ages of 5 and 17 in Phoenix, Ariz., skin-tested with coccidioidin and tuberculin and photofluorographed, are presented. The children showed no significant differences in sensitivity to coccidioidin on the basis of sex or nationality. Sensitivity to coccidioidin was found to increase with length of residence in Phoenix and children living in a dusty area of the city showed higher proportions of positive reactors than those living in less dusty areas.

CONCLUSION

1. Sensitivity to coccidioidin as revealed by skin test among grade school children in Phoenix is directly related to length of residence in the endemic area and is of relatively long duration.

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ACKNOWLEDGMENTS—Grateful acknowledgment is made to A. D. Langmuir, M.D., and M. L. Furcolow, M.D., and to R. E. Lewis of the Communicable Disease Center, Public Health Service, for their suggestions and help with the data; to C. E. Smith, M.D., of the University of California, for his gracious supply of antigen; and to G. C. Crecelius, Ph.D., of the Arizona State Department of Health, and Trevor Browne, M.D., school physician, Phoenix public schools, for their enthusiastic aid with the details of the survey.

Postdoctoral Awards in Statistics

The Committee on Statistics of the University of Chicago has established, under a five year grant from the Rockefeller Foundation, a program of postdoctoral awards to provide training and experience in statistics for scholars whose main interests lie outside that field. Three awards of $4,000 or more will be made annually to holders of a doctorate or equivalent in the biological, the physical, and the social sciences. In addition, office space will be provided and $600 to $1,000 made available for clerical and other assistance. There will be no tuition charges.

Applicants must have the doctor's degree except in the case of recognized research workers whose experience and accomplishments are clearly the equivalent. Candidates whose mathematical preparation includes less than the usual sophomore year of calculus will not ordinarily be considered, but previous training in statistics is not required. Preference will be given to candidates having research programs under way.

Further information from Committee on Statistics, University of Chicago, Chicago 37. Applications for the academic year 1952–1953 should arrive by April 1, 1952.

The Application of the *in vitro* Virulence Test for *Corynebacterium diphtheriae* in the Public Health Laboratory*

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THE *in vitro* virulence test for *Corynebacterium diphtheriae* developed by Elek[1] and Ouchterlony[2] and subsequently modified by King, Frobisher, and Parsons,[3, 4] has been employed as a parallel with animal tests in the Division of Laboratories, California State Department of Public Health, to determine its suitability as a routine procedure. This study included: (a) the reliability of the test in relation to the intradermal virulence test in guinea pigs[5]; (b) the time required to report the results of the *in vitro* test as compared with the intradermal test as performed in our laboratories; and (c) the stability of the required materials.

METHODS

The *in vitro* tests were performed according to the method described by King, Frobisher, and Parsons,[3, 4] with the following modifications:

a. The base medium was filtered through a layer of cotton before and after the adjustment of the pH. A very clear medium was produced.

b. The antitoxin used for this study was obtained from Cutter Laboratories and produced better results at a concentration of 2,200 units per ml. than at a concentration of 500 units per ml.

c. Broth cultures were grown for 6–18 hours in 1 ml. of 1 per cent glucose beef heart infusion broth. Satisfactory growth could generally be obtained in 6 hours if the tubes were shaken several times during the incubation period.

d. A sterile cotton swab proved more satisfactory than a loop for the inoculation of the plates.

e. The sterile plates were more satisfactory if dried for 4 hr. at 37° C. before use.

The intradermal tests were performed on guinea pigs using the procedure outlined by Beattie.[5] Growth of a pure culture on a Loeffler's slant was suspended in about 1 ml. of Stone's[6] suspending solution. An amount of 0.3 ml. of the suspension was inoculated intradermally into one side of a guinea pig weighing approximately 300 gm. After 4 hours, a protective dose of antitoxin in excess of 1,000 units was given intraperitoneally. One hour later, 0.3 ml. of the suspension was injected intradermally on the opposite side of the guinea pig to act as a control on nonspecificity. Tests were read at 24 and 48 hours after inoculation.

Since the type of serum employed may be an important factor,[3] three types,

* Presented before the Laboratory Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

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human, rabbit, and horse, were used in this study. The human serum was discontinued after 60 tests, as the reactions were considerably weaker than those obtained with either rabbit or horse serum. Also human serum varied greatly from lot to lot. This variation has been noted to some extent recently by Hook and Parsons, who found that much of the variation could be eliminated by the addition of 0.50 per cent NaCl to the serum. They concluded that human serum was as suitable as rabbit serum, provided that a minimus control was used unless the donor had recently received antibiotics. The rabbit serum was discontinued after 87 tests because the reactions were consistently weaker and less well defined than those with horse serum. The difference here may be due to the fact that we were not able to obtain rabbit serum completely free of hemoglobin. Chemical analyses showed an iron concentration of 1.35 mg. per ml. in horse serum and 1.41 mg. per ml. in rabbit serum.

The cultures employed in this study were all recent isolates from cases or suspected cases of diphtheria. Comparative studies in duplicate were made on 104 such cultures.

RESULTS

The results of these tests are shown in Table 1. Of the 104 cultures tested, 80 were positive by the *in vitro* test while 75 were positive in the intradermal test. Seventy-three were positive by both methods, 7 were positive by the *in vitro* method but negative by the intradermal method, and 2 were negative by the *in vitro* method but positive by the intradermal method. Of the 7 positive by the *in vitro* method but negative by the intradermal test, 5 were positive by the intradermal method when repeated with a larger inoculum.

A further series of 16 cultures using 7 *gravis*, 4 *intermedius*, and 5 *mitis* types of *Corynebacterium diphtheriae* were positive by the *in vitro* test, but 1 *gravis* and 1 *mitis* culture produced doubtful results by the intradermal method. The remaining 14 were positive.

TABLE 1.

Comparison of in vitro and Intradermal Methods for Virulence Test for C. diphtheriae

No. Cultures Tested	*in vitro Method*	*in vivo Method (Intradermal)*
Total No. tested	104	104
No. positive 24 hr.	27	17
No. positive 48 hr.	73	75
No. positive 72 hr.	80	—
No. doubtful	3	6
No. negative	21	23
No. positive by both methods	73	
* No. positive by *in vitro*, negative by *in vivo* method	7	
No. negative by *in vitro*, positive by *in vivo* method	2	
No. negative by both methods	16	

* On repeat with heavier inoculum, 5 became positive by the *in vivo* method.

A comparison of freshly prepared versus stored media showed that equally good results could be obtained from media stored for at least 5 months in the refrigerator, provided the agar base and the serum were stored separately.

DISCUSSION

Other investigators[4, 5, 7] have noted considerable difference among various brands of antitoxin. In some instances, aberrant lines are produced by diphtheroids as well as by cultures of *Corynebacterium diphtheriae*. In other instances no lines of precipitate are produced. While only one brand of antitoxin was used in this study, it should be emphasized that the particular brand of antitoxin must be tested with known cultures before using it in routine procedures.

As pointed out by Freeman, the variables inherent in various antitoxin preparations must be understood and controlled in the use of this test in routine procedures.

The variability of the serum, as indi-

cated earlier, has been a subject of investigation.[8] However, recent work [6, 9] indicates that human, rabbit, or horse serum may be equally satisfactory, provided the serum is properly prepared.

For routine diagnostic work the *in vitro* method has demonstrated much promise. While 48–72 hours may be necessary for incubation, results can still be reported faster than by the intradermal method because less time was required for incubation of the broth culture than for the Loeffler's culture used in the intradermal procedure. It was noted that, frequently, results of the *in vitro* test could be obtained before cultures were ready for use in the intradermal method. Also, by use of the *in vitro* test, variabilities of different guinea pigs can be avoided, as well as much of the expense involved in animal inoculations.

SUMMARY

The observations presented herein indicate that with certain precautions the *in vitro* test can be satisfactorily used in routine diagnostic work.

This test should prove of especial value in laboratories where the use of animals presents a difficult problem.

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Bruce H. Douglas Award

An annual award, to be known as the Bruce H. Douglas Award, has been established by the Michigan Trudeau Society in honor of the late Bruce H. Douglas, M.D., commissioner of health for Detroit, who died in August, 1949. The award, a bronze plaque, will be presented to an individual who has made an outstanding contribution in the field of tuberculosis treatment or control. In alternate years the individual must have made at least a portion of his contribution in Michigan.

Dr. Douglas was a past president of the National Tuberculosis Association and a member of its board of directors. He was also a Fellow of the American Public Health Association.

Engineering Problems in Water Fluoridation*

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BY and large, the solutions to the problems common to almost all fluoridation installations can be found in satisfactory answers to questions such as: How much fluoride should be added? Which fluoride compound should we use? How should we feed it? Where should it be applied? How should the operators be protected? How should we control it?

The correct answers to these questions will be obtained largely through the efforts of engineers. The design and installation of fluoridation equipment are the joint responsibility of engineers employed by the city, the state health department, consulting engineering firms, and equipment manufacturers. Plans and specifications will be prepared either by the city's own engineering staff or by consulting engineers retained by the city. These plans will be submitted to the state health department for approval. Equipment manufacturers will be governed by the specifications devised by the city and state engineers. Each of these groups will be confronted with a variety of problems which will differ in each community. The correct solution of these problems will provide a procedure comparable in its benefits to other water works practices which have contributed immeasurably to the public health.

* Presented before the Dental Health, Engineering, and Health Officers Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

HOW MUCH FLUORIDE SHOULD BE ADDED

A fluoride concentration of 1.0 p.p.m. is the optimum in most communities in this country. In areas where the environment stimulates an excessive water intake, it may be necessary to reduce this concentration to as little as 0.7 p.p.m. Such areas are distinguished by very high daytime temperatures and low humidities and are likely to be semi-arid or desert. They are also sparsely settled. On the other hand, where relatively little water is consumed, as in the extreme northern part of the country or in communities situated at higher altitudes, the optimum concentration may exceed 1.0 p.p.m. In some places, up to 1.5 p.p.m. may prove to be the best.

States with regions having these extremes in factors influencing water consumption are currently determining for themselves the optimum fluoride concentrations. This is done by observing the dental effects of waters containing various amounts of fluorides. Nearby states, or those having a similar environment, are adopting these optimum concentrations if, for various reasons, they cannot make studies themselves.

The amount of fluoride to be applied will be the difference between the predetermined optimum amount and the concentration in the untreated water. Many water supplies have not been examined for fluorides over any extended period of time. Where such records are

not available, fluoride determinations of the untreated water should be made at regular intervals during fluoridation in order to discover any variations. In cases where other treatment processes reduce the natural fluoride content, knowledge of the raw water fluoride concentration alone will not be sufficient to determine the amount to be added. Instead, the fluoride concentration should be determined at the point immediately prior to the addition of fluorides.

WHICH FLUORIDE COMPOUND SHOULD BE USED

At present, three preferred compounds are used in fluoridation: sodium fluoride, sodium silicofluoride, and hydrofluosilicic acid. Other compounds are not being seriously considered now, either because of their cost, corrosiveness, low solubility, hazards in handling, or unavailability in commercial quantities. Table 1 shows some of the characteristics of these three compounds.

Table 2 illustrates their relative order of desirability.

CHEMICAL COST

Based on fluoride ion content, sodium silicofluoride is the least expensive source. Sodium fluoride is about two and one-half times more costly, while 30 per cent hydrofluosilicic acid is about three times as expensive. The acid can be obtained in higher concentrations, but the increase in cost is disproportionate. In order to stimulate increased production of sodium silicofluoride, the controlled price recently was increased. The increase, however, will be insufficient to affect significantly the existing advantage in cost over the other two compounds.

SOLUBILITY

If a gallon of hydrofluosilicic acid is required to fluoridate a quantity of water, then 17 gallons of a saturated solution of sodium fluoride, or 65 gallons of a saturated solution of sodium silicofluoride, will be required for the same amount of water. This inherent advantage in hydrofluosilicic acid is reflected in the lower cost of solution feeders and solution tanks. However, the advantage of the acid's high solubility is lost in the larger installations, where the other two less expensive compounds are proportioned directly with dry feeders.

CHEMICAL STORAGE SPACE

For the same quantity of fluoride ion, sodium silicofluoride requires the least storage space; hydrofluosilicic acid the most. However, the acid is stored in tanks which might be placed outdoors or underground. Practically speaking, consideration of storage requirements as a factor in choosing a particular compound depends primarily on a comparison between costs for providing additional storage space and the price of the compounds.

FEEDER SPACE LIMITATIONS

Hydrofluosilicic acid has been chosen in some communities where available space in small treatment plants is limited. Inasmuch as the acid can be stored in tanks at some distance from the feeder, and no solution make-up equipment is required, the use of the acid is advantageous when room is available for only the solution feeder.

CORROSIVENESS

Although the relative corrosiveness of the three compounds differs, equipment manufacturers provide about the same corrosion-resisting materials for solution feeders, tanks, and appurtenances, regardless of the compound used. Almost the only exception is the action of hydrofluosilicic acid on ceramic crocks or glass-lined tanks (as a result of vaporization and the formation of small amounts of hydrofluoric acid on the liquid surface). However, hydrofluosilicic acid will seldom be used in such

TABLE 1

Characteristics of Three Fluoride Compounds

Chemical	Per cent Fluoride in Commercial Chemical	Solubility at 25° C. g./100 ml.	Cost/Lb. ¢	Cost/Lb. Commercially Available F. ¢
Sodium fluoride	44.4	4.05	11.5	26.0
Sodium silicofluoride	60.0	0.762	6.0	10.0
Hydrofluosilicic acid (30%)	23.7	—	7.0	30.0

TABLE 2

Order of Desirability of Three Fluoride Compounds

	Sodium Fluoride	Sodium Silicofluoride	Hydrofluosilicic Acid
Cost	2.5	1.0	3.0
Solubility, gallons solution required	17.0	65.0	1.0
Storage space required	1.5	1.0	2.5
Limitations, feeder space	2.0	2.0	1.0
Corrosiveness	1.0	1.5	2.0
Incrustation in feeder	3.0	2.0	1.0
Bulk handling problems	2.0	2.0	1.0
Hazards to operators	1.0	1.5	1.0

containers because it can be drawn directly from the rubber-lined drums in which it is shipped or stored.

INCRUSTATION IN FEEDING EQUIPMENT

Incrustants form occasionally in solution tanks, feeders, and feeder lines. These are essentially calcium and magnesium fluoride or silicofluoride derived from strong fluoride solutions and the hardness constituents of the water. No incrustants are formed when hydrofluosilicic acid is used because it is not ordinarily diluted with water. Incrustants formed when sodium silicofluoride is used (calcium or magnesium silicofluoride) are slightly more soluble than calcium and magnesium fluoride. The problem can be minimized by softening the solution water or applying small amounts of hexametaphosphates.

The use of softeners to reduce loss of fluorides caused by fluoride precipitation is not ordinarily justified. The savings realized over the cost of softening amount to less than $2 per year in a city of 10,000 population using water of 200 p.p.m. hardness.

There is very little additional labor involved in removing the precipitated fluorides from solution tanks, inasmuch as sodium fluoride contains insoluble material which also must be removed periodically.

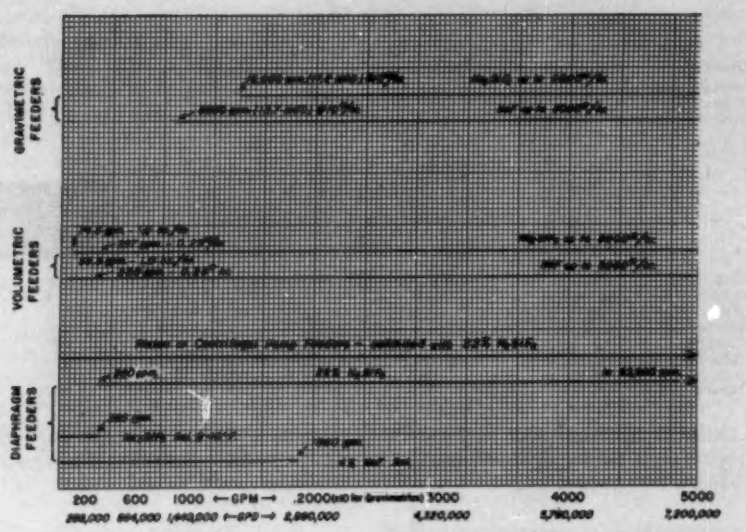
BULK CHEMICAL HANDLING

Because hydrofluosilicic acid can be readily pumped, little manual labor is required at the treatment plant. At present, sodium fluoride and sodium silicofluoride can be purchased only in bags or barrels which require some manual effort to empty. For larger installations, bulk shipments may eventually become a reality, but the possible advantages of this development may be nullified by the cost of dustproof conveyors and the hazards associated with the fluorides left in the cars.

HAZARDS TO OPERATORS

Dust arising from the handling of powdered fluorides can be controlled by careful handling and the use of protective devices. Practically no hazards are involved in using the acid inasmuch as it is ordinarily proportioned directly from the shipping container. At some of the smaller plants, where the acid requires dilution prior to feeding, considerably more care in handling is required. No particular advantage is gained by this

CHART 1.



procedure, however, because about as much effort is required to dilute the acid as to make up the less expensive sodium fluoride solution.

HOW SHOULD FLUORIDES BE FED

The choice of a feeder depends primarily on the compound used and the amount to be fed. The rate of feed must be adjusted according to the amount of water per minute passing the point of application. For this reason, classifying feeders according to the size of the community or the number of gallons of water per day delivered by a plant is impracticable.

The capacities of various types of chemical feeders introducing 1.0 p.p.m. fluoride are shown in Chart 1.

Gravimetric feeders are suitable for either sodium fluoride or sodium silicofluoride. They feed the material at a constant predetermined rate automatically controlled by the weight of the compound left in the storage hopper. The accuracy is well within 5 per cent. The feeders are intended for the largest installations. A minimum of 8,900 g.p.m. should be available for treatment at the minimum rate of feed of 10 pounds of sodium fluoride per hour; 12,000 g.p.m. at the minimum rate of 10 pounds of sodium silicofluoride per hour. Machines of this type can be obtained which are capable of treating the largest water supplies in the country with 1.0 p.p.m. fluorides.

Gravimetric feeders are designed to deliver a given weight of chemical per minute while volumetric feeders proportion a particular volume of material per minute. Volumetric feeders are available in sizes comparable to gravimetrics, but inasmuch as their accuracy decreases in the larger capacities, gravimetrics should be used wherever possible. Some volumetric feeders are capable of delivering as little as one-quarter of an ounce per hour. It has been found, however, that this extremely low rate is not en-

tirely satisfactory. The chemical tends to arch in the hopper after several weeks, probably because of its slightly hygroscopic tendencies, resulting in erratic fluoride delivery. In Wisconsin the practice now is to limit the minimum rate to about one ounce per hour. This rate corresponds to a plant delivering 55.5 g.p.m. if sodium fluoride is used and 74.5 g.p.m. when using sodium silicofluoride.

The minimum delivery rates of continuously operated diaphragm solution feeders varies from 2.5 to 12.6 ml. per minute. By intermittently operating the feeders with timed relays, deliveries can, of course, be reduced considerably further. However, on the basis of continuous operation, plants delivering less than about 50 g.p.m. should be treated with solutions of sodium fluoride of less than 4 per cent strength. Saturated solutions of 4 per cent sodium fluoride are continuously and automatically obtained with a saturator now available. Water is allowed to pass downward through a bed of coarse grade sodium fluoride and a saturated solution is withdrawn by the feeder from the bottom of the tank. Diaphragm solution feeders can be used with saturated sodium fluoride solutions at plants delivering 50 g.p.m. and up to 1,880 g.p.m. However, in the upper reaches of this range, sodium silicofluoride fed with volumetric feeders would be more economical. In general, where capacities of solution feeders for 4 per cent sodium fluoride and volumetric feeders for sodium silicofluoride overlap, the deciding factor may well be the savings accruing over the estimated life of the feeder based on the delivered price of the two compounds.

Solution feeding of sodium silicofluoride, while theoretically possible, may prove impracticable from the standpoint of preparing accurate solutions, particularly when solution water temperatures vary.

Undiluted 22 per cent hydrofluosilicic acid cannot be used in water supplies delivering less than 150 g.p.m. when the minimum feeder rate is 2.5 ml. per minute. Solution feeders are available for feeding this acid in any higher quantity against any pressure encountered in water supply practice. Piston-type solution feeders of considerably lower capacities have been recently announced, but none so far have been used for this purpose.

WHERE SHOULD FLUORIDES BE APPLIED

An important consideration in fluoridation is the determination of the point in the water system at which fluorides should be applied.

Generally, untreated water supplies present the fewest problems. Inasmuch as these supplies are derived principally from wells, the fluorides are injected into the discharge side of the well pump. Other factors being equal, the preferred location should be chosen from the point of view of absence of excessive pressures, convenience of replenishing the fluoride solutions and ease in measuring the quantity of water treated. Consideration also should be given to locations where back-siphonage of the fluoride solution through the feeder is most improbable.

In systems where the water is otherwise treated, the principal considerations in choosing the point of application are the quantities of fluorides which will be lost during subsequent treatment processes and the convenience in replenishing the feeder hoppers. In some few instances, it is economically justifiable to realize some loss of fluoride. Where transportation, storage or handling costs can be substantially reduced by adding fluorides to the raw or partially treated water at a more accessible point, the loss of fluorides through the plant may be small enough, in some cases, to realize a substantial saving.

HOW TO PROTECT OPERATORS

The hazards inherent in the handling of fluorides by water works personnel can be eliminated by utilizing four safeguards: choice of fluoride compound; proper handling procedures; personal protective devices; and dust collecting apparatus.

The inhalation of fluoride dust is the principal hazard to operators. This can be minimized considerably by using a recently developed crystalline sodium fluoride which contains practically no particles small enough to form dust. Careful handling of the powdered compounds, either while emptying barrels or when transferring small quantities from the shipping containers to solution tanks, is most important. Spilt fluorides should be removed by wet mopping. Masks should be worn to protect operators in the event dust is accidentally generated. These should be of the type classified by the Bureau of Mines as approved for "all dust" or "toxic dust." Replacement filters should be of the type bearing the same approval classification. Rubber gloves should be worn because fluorides are a skin irritant. Where large quantities of fluorides are dumped into feeder hoppers from barrels or bags, blower-operated dust collectors should be installed in the hoppers. Pneumatic conveyors should be vacuum-operated.

HOW TO CONTROL THE FLUORIDE CONCENTRATION

The most important consideration in assuring a constant, invariable fluoride concentration is the selection of accurate feeding equipment. If good feeders are properly operated and maintained, their accuracy can be assured indefinitely.

In order to check this accuracy and to make certain that the same fluoride concentration is reaching all parts of the distribution system, two controls should be used. One requires periodic fluoride determinations of representative water samples; the other, a determination of the amount of fluoride used and the amount of water treated over a given period. The latter control is difficult where fluoride saturators are used, because accurate measurements of the amounts of fluorides used cannot be obtained except during a prolonged period. The saturator must be replenished well before the previously added fluorides are dissolved, thus leaving an unknown amount. This disadvantage, however, is minimized by the definite superiority of the saturator in eliminating errors in preparing unsaturated fluoride solutions.

The fluorides in water should be determined at least once a day, and, in the larger plants, several times a day. The present test is based on the decolorization of a zirconium-alizarin lake in an acid solution. The reagent is not stable, the color development requires about an hour, the range is narrow, and many contaminating ions in water interfere with the reading. While the interference of most ions is linear, the effect of aluminum, phosphates, and chlorine varies with the actual fluoride concentration. When significant quantities of interfering ions are present, distillation of the sample is almost obligatory.

SUMMARY

Engineers concerned with the design of the average fluoridation installation will be obligated to provide satisfactory solutions to these questions which almost invariably arise.

1. How much fluoride should be added?
2. Which fluoride compound should be used?
3. How should fluorides be fed?
4. Where should fluorides be applied?
5. How should operators be protected?
6. How should the fluoride concentrations be controlled?

If the problems posed by these questions are effectively solved, the community will not only benefit from the considerable reduction in caries incidence, but will obtain this advantage in a way that is safest and most economical.

Multiple Screening*

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MULTIPLE screening is an attempt, by mass methods, to utilize a series of clinical diagnostic procedures in early detection of chronic disease.

Each of these diagnostic tests must possess a high degree of reliability in indicating whether or not a person is suffering from, or is a potential victim of, a specific disease. Each of the tests that are employed must therefore meet certain rather rigid requirements.

a. They must be simple—so simple that they can be done easily, quickly, in rapid succession by a skilled technician.

b. They must have a high degree of accuracy. In 100 tests made, at least 95 per cent of those persons who are found positive must be actually affected by the specific condition. Furthermore, the test must be unequivocal—yes or no—with no margin for a maybe or perhaps.

c. The test must be easy to interpret. The person who administers the test can be a technician who has no ability to interpret all the various implications of the results that are secured. But the expert who is given the results of the test for final analysis should be able to interpret these results accurately, even though he has never seen the person tested.

Thus, diagnostic screening tests presuppose an organization whereby large numbers of people who are chosen at random may be given a series of clinical examinations quickly, efficiently, and accurately, with a minimum of inconvenience to the testee and a minimum expenditure of time by the technician as well as by the final interpreter.

The assumption is that without knowledge of the past history of the patient, with no information concerning his heredity, his constitutional make-up, his mental or emotional characteristics, his habits, his past illnesses, or his reaction toward his environment, the series of tests will separate the sick from the well. They will select some 40 or 50 persons in each 1,000 examined who have actual or potential chronic disease. The other 960 or 950 will be considered as potentially healthy and well, and thus not in need of immediate medical supervision.

ADVANTAGES OF THE PLAN

This plan has much to recommend it. Multiple screening will select some 40 persons in each 1,000 adults who are chosen at random from the general population and who will be found to have some serious clinical manifestation that requires immediate medical care. In many instances these persons will have had no inkling that they are ill.

The various clinical tests that have been employed in multiple screening can be carried out efficiently, accurately, and inexpensively. The individual tests can be performed at a much lower cost if carried out by technicians on a mass basis than if done a few at a time in the private office of a physician or in a small laboratory. Some clinicians may feel that a urine test for sugar or albumin, or a blood sugar test, for that matter, is not of much clinical significance if done only once. All will agree that the tests

* Address before the Southern Tuberculosis Association, Chattanooga, Tenn., September 20, 1951.

thus far devised for detection of increased intraocular tension are not suited to mass methods of testing. Some of the other tests, such as x-ray of the chest, cytological tests for detection of early cancer, and cardioballistics or electrocardiograms, are quite expensive and are not very productive unless carried out on a limited, selected sample of the population, rather than on a random sample basis. But the tests are accurate and reliable.

Multiple screening is very popular, and it does provide an opportunity for the health department to demonstrate its value and effectiveness. I strongly support the concept—as many do not—that the health department has important functions in the field of medical care. I believe it quite appropriate that the official health service should devise procedures which will aid in early diagnosis of disease and thus lead to health promotion for all the people. Furthermore, these diagnostic aids need not perforce be directly related to communicable disease control, or to detection of industrial health hazards. I am quite willing to agree that the provision of these diagnostic tests to the community, free of charge, is a legitimate inclusion in the budget of the official health service of the local community.

I am also willing to agree that the program has some health education value.

Why, then, if multiple screening has all these advantages, am I so obstinate, perverse, inflexible, and stubborn as to oppose what Dr. C.-E. A. Winslow has called "the greatest advance in public health techniques since the discovery of diphtheria toxoid"?

My reasons are that I believe multiple screening to be inferior medicine, poor medicine, slipshod, short-cut medicine and, furthermore, poor public health.

Let us examine briefly the history of the evolution of mass screening techniques in disease detection, for mass screening is not a new procedure. In the days of maximum immigration—about 1910—the U. S. Maritime Quarantine Service developed multiple screening to a high degree of efficiency. When a ship arrived from Europe at the quarantine station, some two to four thousand immigrants were screened in a few hours, with a remarkable degree of accuracy and acumen. Some of the Public Health Service officers are still alive who participated in these examinations. They were uncanny in their efficiency. They were looking for leprosy, trachoma, favus, tuberculosis, any of the acute exanthemas, and for mental defectiveness, together with any other serious physical or mental disability that would make it hard for the immigrant to support himself in the new country. Using very simple diagnostic tests, these USPHS officers became extraordinarily accurate and effective in screening the fit from the unfit.

The first screening tests that meet our present criteria, and that were carried out on a large scale, were the studies on hookworm prevalence, as detected by microscopic examination of stools, which were carried out by the Rockefeller Sanitary Commission in 1912 and thereafter. These were followed by the extensive studies in the southern states by the USPHS on prevalence of malaria as determined by mass examination of spleens and of blood films.

We learned then, and have since forgotten, that these mass diagnostic procedures are of little or no permanent clinical value. Their value lies in the epidemiological knowledge that is obtained, with the resultant improvement in effectiveness of control measures, the determination of sources of infection, and the aid that is given in effective follow-up of contacts.

There followed the tremendously popular screening tests for tuberculosis of the lungs. These tests were initiated by Chadwick and Bigelow (about 1930)

among the school children of Massachusetts. Chadwick soon determined that the major advantages of the method were epidemiological and not clinical. Almost as well received were the extensive studies of the prevalence of syphilis through mass utilization of serological tests. Here again the major advantages that were secured were not the detection of early cases of disease but rather (a) determination of sources of infection, (b) follow-up of contacts, (c) increased epidemiological knowledge, (d) more effective control, and (e) the educational value of the procedures.

In each of these instances, a single accurate test was performed on a large mass of people, often an unselected population, for the determination of a single clinical condition. In each instance these clinical conditions were infections and thus were not only of individual import but also had public health implications in that the person who was screened out was a potential source of infection to his fellows.

The extension of these mass methods to a plan for early detection of chronic degenerative disease was quite logical but unfortunately is based on untenable premises and has few of the epidemiological advantages that have made mass diagnosis of contagion a worthwhile public health effort. The first of these clinics that were established were for early diagnosis of cancer. Early detection of diabetes was next approached, on a mass case finding basis. The next obvious step was a combination of a series of tests to be done in rapid sequence—and multiple screening was conceived.

Since mass screening has yielded so much valuable information and has developed so logically, you may well again inquire why I oppose multiple screening.

My major reason, as I have stated, is that multiple screening in early detection of chronic disease is low-grade, short-cut medicine. It is not good public health. It will reflect unfavorably on the health service. It is unfair to those who are examined, in that they are not given adequate service. It is unfair to the community because the fundamentals of health education are violated by such a program.

The basic weakness of the plan is that diagnostic techniques which have been devised as a means to an end are used as an end in themselves. A positive diagnostic screening test does not make a diagnosis—nor does a negative test, or series of negative tests, indicate that an individual is free from disease.

It is true that the individual screening tests which are employed are not intended to be diagnoses. In effect, however, they are employed as "presumptive diagnoses" in that they separate one group of persons which is presumably *well* from another group which is presumably *ill*. But we have learned long since that isolated diagnostic tests, of themselves, have little clinical significance.

Chronic degenerative disease is an individual and a very personal matter. Adequate medical care in early detection, prevention, and treatment of these conditions requires a comprehensive knowledge of the whole person, his family history, his past illnesses, his habits, his personality, his environment, his reaction to adversity, his relationship to his fellows, and his mode of life. Every person requires skilled and continuous guidance in the promotion of his health and in the prevention of illness and suffering, as well as in the prolongation of his life to its normal span. Various diagnostic tests have been devised which will aid the physician in individual health protection and promotion. Often these tests are of critical import in detection of the immediate needs of the patient. But again it must be emphasized that they are a means to an end and not an end in themselves. They must be used not as an infallible criterion, but simply as a small segment of ac-

curate information which is fitted into a total picture. All of these diagnostic tests, taken separately or collectively, and placed in true proportion and perspective, are of real diagnostic value. It must be remembered, however, that they represent but a profile of an individual at a given moment of his life. They are simply a one-dimensional cross section of a most complex four-dimensional structure.

What I am really saying is that the individuals in a community in whom we are interested are not so much the 40 of the 1,000 who were selected by these various tests as presumably ill, but the 960 persons who were told that they were presumably well.

What is a well person? What is adequate medical care? What is the basic function of a physician? Certainly it is not primarily to prevent death or to prolong inevitable suffering. The function of medical care is to aid the individual to live his life within his personal limitations to the greatest possible degree of happiness, comfort, and satisfaction, to enable him to adjust his personality to his environment, to understand his own limitations, and to learn to live with himself, with his family, and with his community.

The proponents of multiple screening may well be in complete agreement with my thesis. They are simply expediting the program by selecting a group of persons who are in *immediate need* of medical supervision and making sure that those in most urgent need are placed under adequate care at once. The difficulty is that these 40 persons are not the only ones who require health supervision. In fact, they need it no more than the 960 who have been screened out as "presumably well."

PROPOSAL

Would it not be more appropriate—better public health, better medicine, and better health education if we completely reversed our procedures?

I wish to propose that the health department shall develop facilities for a series of standard and acceptable diagnostic tests which would be available to all physicians and to all patients who have been referred by physicians; and that these tests shall be free of cost.

At the outset these procedures might include diagnostic tests for syphilis, x-rays of the chest for tuberculosis, tests for anemia and blood dyscrasia, blood sugar determination, determination of Rh factor, and cytological detection of early cancer of the cervix. Tests for increased intraocular tension might be postponed until more satisfactory mass techniques have been devised.

Urinalysis, blood pressure reading, and simple tests for visual acuity and hearing loss, as well as weight and height recording, which are now included in multiple screening, should of course be carried out as a routine by the physician.

All these clinical diagnostic tests and perhaps others as well, such as cardioballistics, and electrocardiographic recordings that may be developed to meet standard criteria, could be carried out at a low unit cost and with high quality of performance. The methods would have great educational value to physicians and to the whole community.

The efforts and funds that are now expended by the health department in promotion of multiple screening could be devoted to education of all the people, and to physicians as well, concerning the purpose and value of adequate medical supervision in individual health promotion of all the people. In the long run this plan would reach those 960 "presumably well" persons who are, after all, the ones in whom we have the greatest interest.

Accidental Carbon Monoxide Poisoning Due to Domestic Gas Appliances and Gas Refrigerators: The Problem in New York City and Its Control*

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EXPOSURE to carbon monoxide, either as a constituent of raw "manufactured" gas or as a product of incomplete combustion, has been the most common cause of domestic accidental poisoning in New York City. Carbon monoxide poisoning by inhalation of raw illuminating gas has also been the most common cause of suicidal death.

The incidence of these fatalities has diminished considerably. Thus, in 1926 there were 825 accidental deaths from carbon monoxide poisoning in the city,[1] as compared with 222 deaths in this category in 1950. Included in the accidental group were some cases in which the circumstances could not be determined.

The replacement of gas lighting fixtures, the improved design and more rigid standards of inspection, and the testing of new gas appliances by industry have been important factors in reducing the incidence of carbon monoxide poisoning. Nevertheless, the hazard has not been completely eliminated. A large number of defective, worn out, and unsafe gas-burning appliances remain in use and continue to furnish an easy means of accidental poisoning. A serious public health problem still exists and warrants intensive investigation.

The replacement of manufactured gas by natural gas or by mixtures of natural and manufactured gas has mistakenly led to the belief that the danger of poisoning by carbon monoxide has been eliminated because natural gas does not contain any of it. Although inhalation of raw natural gas cannot cause such poisoning, the improper or incomplete combustion of this, as of any other fuel, can result in the production of dangerous amounts of carbon monoxide.

GAS REFRIGERATOR PROBLEM

The problem of domestic carbon monoxide poisoning in New York City has been emphasized in recent years by its increased occurrence as the result of exposure to carbon monoxide generated by incomplete combustion of illuminating gas in the heating units of gas-flame refrigerators. The Office of the Chief Medical Examiner first became aware of such cases in 1937. In that year there were two fatal accidents, each involving a newly married couple found dead at

* Presented before the Industrial Hygiene Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 31, 1951.

home under circumstances at first considered mysterious until the deaths were traced to carbon monoxide produced by a defectively operating gas refrigerator. Since that time such deaths, which at first occurred sporadically, have become more frequent. There has been a total of 28 fatal incidents and 39 deaths from 1944 up to and including the year 1950. The year 1949 showed 10 deaths and the year 1950, 13 deaths, a much higher number than in any previous year since 1944. Thirty of these deaths were the subject of a prior communication.[2]

There have also been many single and multiple nonfatal poisonings in combination with fatal cases and in separate incidents. Thus, in 1950 there was a total of 21 incidents involving 50 people, 13 of whom were found dead, the remaining 37 severely poisoned. Similar fatalities have occurred in Massachusetts[3] and in Cincinnati.[4]

The problem of carbon monoxide poisoning resulting from the operation of the gas refrigerator has several distinguishing features in comparison with other types of gas appliances. Combustion of gas in the heating unit of the refrigerator does not take place in the open air but is confined to a narrow cylindrical metal generator flue, which encloses the flame of a modified Bunsen burner. A spiral twisted metal baffle is suspended with only slight clearance in the upper end of this flue. The heat of the flame is transmitted to the flue and baffle and thus to the surrounding sealed generator, which contains the refrigerant gases. The generator flue is connected with a slightly larger calibered ceramic extension flue, and this in turn with a larger dilution flue, which discharges the products of combustion through an opening in the top of the refrigerator directly into the atmosphere of the room.

If the burner is adjusted so that there is an insufficient supply of primary air or is aligned so that there is impingement of the flame on the metal around the flue opening, or if the gas pressure is not properly maintained (especially if there is over-gassing), or if the flue system becomes obstructed with deposits of carbon or corrosive scale so that a sufficient supply of secondary air cannot be drawn in, there will be incomplete combustion of the gas, with the production of carbon monoxide, which is liberated into the atmosphere of the room. There is often a characteristic unpleasant aldehyde-like odor caused by the other volatile products of incomplete combustion of gas in a defectively operating refrigerator. This odor, when it occurs and is detected, is an important warning sign of the emission of carbon monoxide, which in a pure state is odorless. Other significant danger signs indicating possible production of carbon monoxide are overheating of the cabinet and failure of the apparatus to maintain a refrigerating temperature.

Poisoning by the carbon monoxide component of raw "manufactured" or mixed gas is prevented in the case of the gas refrigerator by the operation of a thermostatically controlled valve which automatically shuts off the supply of raw gas should the flame be extinguished.

Since carbon monoxide production results from incomplete combustion, it will be generated by a defectively operating refrigerator whether the fuel used is natural or manufactured gas or a mixture of both. The production of carbon monoxide in lethal concentrations by the incomplete combustion of natural gas and its mixtures in non-vented or improperly vented space-heaters and other appliances has been investigated by Byers[5] and by others.[6] Drinker[7] states that when natural gas is burned, about twice the amount of air per cubic foot must be supplied, as in the case of manufactured gas.

The users of gas-flame refrigerators are not generally aware that such appliances require periodic adjustments and servicing. This type of refrigerator

has no moving parts and is noiseless. It may be operating in an apparently satisfactory manner, without odor, and with a gas flame of the proper color, and at the same time may be discharging dangerous amounts of carbon monoxide. It is therefore imperative that such equipment be inspected and serviced regularly by a conscientious, competent mechanic. This procedure must include careful scrutiny of the entire heating unit and flue system, with thorough cleaning and necessary adjustment, if serious or fatal carbon monoxide poisoning is to be prevented. A carbon monoxide indicator should always be used to test for the presence of this gas.

The gas refrigerator is a continuously operating mechanism, in which respect it differs from other gas-burning appliances. When incomplete combustion of fuel occurs in the refrigerator heating unit, carbon monoxide is continuously being generated and emitted into the atmosphere of the room.

The first gas-flame refrigerators were water-cooled, and the burners and flues were designed to use manufactured gas, which burns more rapidly and requires less air for proper combustion than natural gas or its mixtures. According to the manufacturer, these appliances cannot burn natural gas, reformed natural gas, or high-heat-value oil gas properly. Because of this fact, the manufacturer of gas refrigerators has recommended that the use of all water-cooled refrigerators be discontinued immediately in areas where there has been a change in the composition of the gas fuel and where the adjustment, inspection, maintenance, and servicing of these appliances are not adequately and conscientiously performed.

Spot surveys of water-cooled refrigerators in New York City now fueled with mixed gas and formerly supplied with manufactured gas have shown that they may constitute a grave hazard. Of 330 water-cooled refrigerators tested and inspected, 156, or 59 per cent, were producing dangerous amounts of carbon monoxide. There were 108 additional refrigerators that were not operating properly, although not producing carbon monoxide at the time of testing. Thus, 80 per cent of the group of 330 were found hazardous.

The water-cooled refrigerator, however, does not constitute the entire problem. Of 745 air-cooled models, 304, or 41 per cent, were operating improperly or were producing dangerous amounts of carbon monoxide. These tests were carried out after the change from manufactured to mixed gas.

It is especially important to determine the extent of the same problem in other cities which are currently converting from manufactured gas to other types. There are at present 147 cities in the United States in which manufactured gas is still in use. The health authorities in these places may also be confronted with the problem of increased danger of poisoning from carbon monoxide produced by the water-cooled gas refrigerator if and when there is conversion from manufactured to other types of gas.

Carbon monoxide poisoning from gas refrigerators is characteristically slow as compared to that caused by most other gas appliances. Improperly operating gas refrigerators may discharge carbon monoxide in concentration ranges up to a thousand or more parts per million (0.1 per cent). With concentrations of carbon monoxide in the atmosphere of 400 to 1,000 p.p.m., a relatively long period of exposure is required to produce poisoning and to cause death.[8] This rate of poisoning is also influenced by the activity of the victim. Any substantial leak of raw illuminating gas which contains up to 30 per cent carbon monoxide will soon produce a concentration of carbon monoxide in a confined atmosphere very much greater than the relatively lower ranges of concentration produced by a refrigerator; with ex-

posure to the higher concentrations, asphyxiation by carbon monoxide is rapidly fatal.

In all of the nonfatal and fatal poisonings from the inhalation of carbon monoxide generated by the defective operation of the gas refrigerator, the symptoms manifest themselves insidiously. With the slow accumulation of carbon monoxide in the blood, the victim usually suffers from headache, a sense of dizziness, and muscular weakness. Even before mental confusion develops, the victim may become nauseated and vomit. Gradually there ensues a state of mental confusion and helplessness which becomes extreme. The victim often staggers about; he may overturn furniture and injure himself on broken utensils, frequently leaving a trail of blood stains. There may be involuntary defecation and urination, with evidence that the victim has attempted to clean the feces from his person and surroundings. Washcloths in a basin filled with soiled water or bath water in the tub soiled with feces have been found in several cases. The surroundings are often in complete disorder and the bodies found sprawled in bizarre positions. In many cases the circumstances often give rise to a suspicion of homicide. In several of the incidents investigated, one or two dead persons were found with other persons who were either unconscious or in a completely confused and helpless state simulating alcoholic intoxication.

In all of the fatalities from acute carbon monoxide poisoning in which the victim was found dead at the scene, a conspicuous finding was the characteristic pink or cherry red post-mortem lividity of carboxyhemoglobin in the skin of the dependent portions of the body. These suggillations are readily distinguishable, because of their color, from ordinary post-mortem lividity. In the dark-skinned races the carboxyhemoglobin lividity may not be discernible, but the carboxyhemoglobin coloration of the blood and internal organs can readily be detected at autopsy. A pink color or flush caused by a large amount of carboxyhemoglobin in the blood is sometimes seen in nonfatal cases but rapidly disappears after the victim has been rescued and removed from the carbon - monoxide - containing atmosphere.

In one example of multiple deaths and nonfatal poisoning from inhalation of carbon monoxide generated by the faulty operation of the heating unit of a gas-flame refrigerator the bodies of a mother and infant were discovered. The father, who with an older child had wandered out of the apartment in a confused state, was at first suspected of homicide. Fatal carbon monoxide poisoning produced by a gas refrigerator in an unventilated alcove was immediately recognized by Dr. T. A. Gonzales, Chief Medical Examiner, who was called to the scene to investigate.

In one early case, a honeymoon couple were found dead in their apartment after not having been heard from for several days. The bizarre position of the bodies was especially significant. The refrigerator, which gave rise to the lethal concentration of carbon monoxide, was found in operation. The burner was lit and apparently in working order.

The following case indicates the importance of prompt servicing when a complaint concerning the operation of a gas refrigerator is made. The victim had notified the building superintendent just before noon on Saturday that something was wrong with her refrigerator. He, in turn, notified the refrigerator serviceman, but not realizing the gravity of the situation, and not detecting an odor, failed to turn off the burner. The woman occupant left the apartment soon after and did not return until 9 o'clock that night. Friends who telephoned her the next day (Sunday) received no answer but assumed that she had gone out.

On Monday morning the refrigerator serviceman first responded to the call but was unable to gain entry into the apartment. The superintendent entered with a passkey, immediately detected a disagreeable odor emanating from the refrigerator, and found the occupant dead in bed and the apartment disarranged. The floor of the kitchen and bathroom was soiled with feces, there was blood on the refrigerator door, and a broken pitcher lay on the floor where the victim had evidently fallen and lacerated her forearm. Tests with the refrigerator in operation disclosed high concentrations of carbon monoxide in the bedroom as well as in the kitchen. As in the other cases, all windows in the apartment were closed.

OTHER HOME GAS APPLIANCES

Early in this study it became evident that the household gas refrigerator danger was responsible for only a small proportion of the total number of accidental carbon monoxide poisonings associated with the use of domestic gas appliances. During the ten year period from 1940 through 1949, there were 2,442 accidental and undetermined fatalities from such poisoning in New York City. The undetermined component of this group may include an occasional suicide and even homicide but the great majority were entirely accidental and therefore avoidable.

A study of the geographical distribution of these 2,442 deaths revealed an unduly high concentration in certain areas of the city, but the reasons were not immediately evident. Several questions promptly arose:

1. Why did Manhattan, with a residental population approximately three-quarters that of Brooklyn, have twice as many carbon monoxide deaths?

2. Why did one critical area, which includes three health districts with a population of about 10 per cent of the city, have more than 40 per cent of the total carbon monoxide deaths of the city?

3. Why were there so few deaths, by comparison, in other areas also suspected of poor housing conditions, overcrowding, and other environmental conditions which would seem conducive to a high incidence of accidental carbon monoxide poisoning?

It was established, by comparing housing conditions in three health center districts comprising the critical area—so designated because more than 40 per cent of the total accidental carbon monoxide deaths of the city occurred there—with those in four other health districts of the city, that the age and condition of the buildings were closely related to the number of accidental gas fatalities. The greatest number of dwelling units more than fifty years old was found in that section of the city in which there was the greatest number of such deaths, namely, the Lower East Side. Conversely, districts with fewer deaths had fewer old dwelling units. The reason for this relationship is that in old buildings the gas piping is frequently clogged, pet cocks often leak gas, and serious variations and fluctuations in gas pressure exist.

TABLE 1

Comparison of Age Distribution of Carbon Monoxide Deaths and New York City Population

Age	*New York City (1940) Per cent*	*2,454 Deaths Per cent*
Under 14 years	15.9	2.4
15 to 34 years	34.3	8.3
35 to 54 years	34.2	28.0
55 to 64 years	9.3	21.3
65 and over	6.3	40.0

The age distribution of the population also plays a part in accounting for the excessive number of these deaths. Table 1 shows the age distribution of New York City's population as compared with that of the group of 2,454 accidental and undetermined carbon monoxide poisoning cases. Of these deaths, 1,515, or 62 per cent, occurred among

persons who were over 55 years of age.

Among older people there are thousands who are crippled, feeble, and partially or wholly incapacitated. For such persons the defective, improperly operating gas appliance is an even greater hazard than for the normal, healthy, younger person. Many of these older individuals are occupants of single-room dwelling units which contain a cot or bed, a sink or kitchen equipment, a gas space-heater, a gas range, and often a gas refrigerator, all in the same small room. Such aged infirm persons, living alone in such a room and keeping the windows shut to keep themselves warm, are easily poisoned by carbon monoxide from a slight raw gas leak or from incomplete combustion during the operation of a defective gas appliance.

During an inspection of dwelling units in the critical area mentioned above, a total of 243 apartments was visited, and gas ranges were found in 239 of these. Of these 239 gas ranges inspected, 115, or 48 per cent, had broken gas lines or defective valves or were actually leaking raw gas. In this same group of 243 dwellings, 6 gas space-heaters and 32 side-arm gas water heaters were found defective. In 11 of these homes there were leaking gas valves, and in 10 other premises there was inadequate and fluctuating gas pressure. In 29 other apartments in this group there were uncapped hose-end nozzles and unused gas lines which were also uncapped. Gas refrigerators were found in 57 of the 243 apartments, and 39, or 68 per cent of these, were seriously defective and were discharging carbon monoxide. In all, in this group of 243 apartments 247 gas appliances were found in such condition as to be dangerous to life. Any one of the defects noted might have caused serious illness or death.

It has been found that chance factors are constantly operating to limit the occurrence of fatal accidents. The duration of exposure to relatively low concentrations of carbon monoxide may be insufficient. Walking out of the carbon-monoxide-laden atmosphere at occasional intervals interrupts the exposure. An extremely important factor is ventilation. Adequate ventilation dilutes a potentially dangerous concentration to a nontoxic level. With low concentrations of carbon monoxide, ordinary ventilation from an opened window may keep the carbon monoxide level below the danger point. The state of health and the activity of the individual exposed to the lower toxic concentrations of carbon monoxide are also significant.

Individuals at rest are not as rapidly poisoned as those who are moving around or who are otherwise active. In warm weather, open windows undoubtedly save many lives and prevent serious poisoning. The greater the distance separating sleeping and living quarters from gas appliances, the less likelihood there is of serious poisoning by relatively small concentrations of the gas. Habits of sobriety and good domestic management also tend to limit the occurrence of serious incidents.

These are only chance factors. In any potentially hazardous situation in which carbon monoxide is being liberated into the atmosphere of an enclosed space, a fortuitous combination of circumstances may permit serious or fatal poisoning. This is especially true in the case of the gas-flame refrigerator, the operation of which is automatic and is taken for granted by the user.

Table 2 lists the gas appliances responsible for accidental carbon monoxide poisonings in New York City in 1950. The table does not include all cases, information concerning some not being available at this time. A total of 222 fatalities from accidental and undetermined carbon monoxide poisoning was reported by the Office of the Chief Medical Examiner,[1] of which only 113 are recorded in this table.

TABLE 2

Gas Appliances Responsible for Accidental Carbon Monoxide Poisoning in New York City in 1950

Type of Appliance	*No. of Incidents*	*Fatalities*	*Nonfatalities*	*Total No. of Persons*
Gas ranges	93	65	65	130
Gas refrigerators	21	13	37	50
Portable space-heaters	13	7	7	14
Side-arm water heaters	9	4	10	14
Rigid-type supply lines	8	3	9	12
Flexible tubing	3	2	1	3
Gas-fired central heating plant	1	3	1	4
Gas cocks	2	1	1	2
Gas steam radiators	2	1	4	5
Wall fixture	1	1	0	1
Information not available	15	13	7	20
Total	168	113	142	255

THE NEW YORK CITY CONTROL PROGRAM

The medical examiner in the routine performance of his duties not infrequently serves the community in the capacity of a public health officer. Thus, he may be the first to detect and warn of deaths signaling the onset of epidemics of disease or of food or other types of poisoning which are of direct concern to the public health authorities. In fatal cases the medical examiner's law requires that all deaths from poisoning, whether suicidal, homicidal, or accidental, be reported to the Office of the Chief Medical Examiner for investigation and post-mortem examination. The law also requires that the medical examiner go to the scene and examine the undisturbed dead body in its surroundings. Thus, he often is the first to suspect or detect death from carbon monoxide poisoning and is then in a position to set into motion a proper investigation by appropriate agencies, which in this case includes the police and health departments. The practice of promptly notifying the health department in such cases has been well established in New York City.

In the City of New York, the Sanitary Code requires that all poisonings, fatal and nonfatal, including those resulting from the inhalation of poisonous gas, be reported immediately to the health department. The Office of the Chief Medical Examiner, the police department, hospitals, private physicians, and gas utilities which carry out resuscitation may have such information to report. Facilities have been set up in the health department for receiving such reports and for the immediate dispatch of health inspectors to the scene at all times. These investigations have provided valuable basic data for the direction of the control program. In New York City, the process of receiving reports of fatalities has been accelerated so that a joint investigation by the medical examiner and health inspector often begins a half-hour after the bodies have been discovered at the scene.

On May 1, 1951, the carbon monoxide inspection program of the New York City Health Department was intensified and a total of 100 health inspectors assigned to the project. Each inspector was given special training in the examination and detection of defective and improperly operating gas equipment. Each one was provided with a carbon monoxide indicator and other testing equipment. Supervisory personnel of of the health department joined with Brooklyn Union Gas Company officials in giving instruction. This utility also provided excellent demonstration equip-

ment and made its full facilities available for this activity. Specialized training was also given by the Servel Company, manufacturer of gas refrigerators, as part of its current coöperative program carried on with the health department to eliminate gas refrigerator hazards.

Three targets were selected. The first was a group of 94 buildings in each of which there had been from 2 to 6 fatal accidental gas poisonings, and in all a total of 211 deaths since 1940. These deaths were caused by gas appliances other than refrigerators. The second target was the critical area already mentioned, in which 988 accidental carbon monoxide deaths, or 40.5 per cent of the total number of such deaths, had occurred. The third target was the 500,000 gas-flame refrigerators in domestic use in the City of New York. Of these, the 85,000 dangerous water-cooled models have been receiving first attention. The objective was the elimination of all equipment found dangerous and in bad repair.

After four months of the most intensive work, 22,328 apartments were inspected. Altogether, 11,056 gas appliances were found which were leaking raw gas, were otherwise dangerous, or were in bad repair. Of this group, 3,085 were gas ranges and 2,140 were gas refrigerators. The balance of 831 represented other gas appliances. A total of 1,087 of the 11,056 appliances had to be sealed immediately because they were in dangerous condition. Another survey of 1,075 gas refrigerators showed that 568, or 53 per cent, were in bad repair, and of this number half were actually producing carbon monoxide. These statistics do not represent a complete picture of the condition of all gas refrigerators throughout the city, since the great majority of these appliances tested were in the Borough of Manhattan, where conditions of servicing are the poorest. However, this area was deliberately selected for the survey in order to examine the problem of gas refrigerators and other appliances at its very worst.

Two things were accomplished during this four month inspection program. First, the defects in thousands of pieces of equipment were eliminated and many hazardous situations cleared up. In many instances, the inspectors actually found themselves face to face with persons suffering from carbon monoxide poisoning caused by defective appliances. In one instance, it was possible to secure a blood sample from a woman who, as the inspectors suspected, was suffering from carbon monoxide poisoning caused by an improperly operating gas refrigerator; her blood revealed a 16 per cent saturation with carbon monoxide. There is every reason to believe that this case and many other similar ones could have terminated fatally were it not for the inspection work.

The second accomplishment of this inspection program was that it provided a yardstick with which to measure the requirements of the total problem. It is known that there are some 400,000 dwelling units in the City of New York that are more than fifty years old. The tremendous amount of man power and time that was required to inspect the 22,000 units already visited would have to be multiplied twenty times to carry out the inspection of the 400,000 dwellings needed to complete the project. It is obvious that some other technique in addition to selective inspection would have to be devised to accomplish the objective. These new techniques are being developed and will be the subject of a later report.

In addition to investigation of accidents and health inspection, a carbon monoxide prevention and control program must also include an extensive program of health education and cooperation with other agencies. In the City of New York, 1,100,000 copies of a leaflet, "Gas Can Spell Death," printed

in English and in five foreign languages, are being distributed as the first health education feature of the program. To do this work the full resources of the community were organized. This health education work must be supplemented by outside notices. The daily papers perform an excellent service in this respect. In addition, other media, such as magazines, television, radio, and trade journals, also must be utilized fully for health education purposes.

Other agencies, official and semi-official, play an important part in helping to achieve the objectives of the program and should be called upon for assistance. These include the public utilities, the public service commission, gas appliance manufacturers, real estate boards, voluntary agencies, and other units of the health department and city government, as well as those whose work has some bearing on the problem. Such an all-out attack is necessary for an effective program.

CONCLUSIONS

1. Accidental domestic carbon monoxide poisoning from illuminating gas constitutes a serious health problem, notwithstanding the decreased incidence of such cases today as compared with twenty-five years ago.

2. The increasing incidence of single and multiple fatal and nonfatal cases of poisoning from the inhalation of carbon monoxide generated by improperly operating gas-flame refrigerators constitutes a new phase of the domestic carbon monoxide poisoning problem.

3. There is need for an over-all program to combat the conditions which give rise to carbon monoxide poisoning from all gas appliances in the home. Health departments and medical examiners' offices should assume leadership in this serious public health problem. The full resources of all official agencies should be utilized and their coöperation enlisted.

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An Approach to Solving the Records and Reporting Needs of Local Health Departments in California*

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IN California we have been, and are currently, facing a most complex problem with respect to adequate records, reports, and reporting procedures of local health departments. On the basis of the best information available, somewhere between 25 and 35 per cent of the total amount of effort of local public health workers will be expended on record-keeping or related procedures in the current fiscal year.[1-3] This amounts to somewhere between three and one-third million and four and two-thirds million dollars. The per cent of time of each type of worker varies, but some part of the time so used could be better expended in doing more productive public health program work, if we had better record-keeping systems in use.

The situation in California is one in which the emphasis of program development has changed considerably during the past eight years. The rapid population increase, the reorganization of the State Health Department, and the changing emphasis in public health programs have all added to the complexity of the reorientation of public health programs within the state. Since records, reports, and reporting procedures are a tool used in the public health program, the complex problems in this field only reflect the complexities of the reorientation of the public health program.

A description of what we in the state and local health departments are doing about these problems is the purpose of this paper. The following approach is perhaps not new, but is a combination of many different approaches used many times in the solution of the record-keeping problem since the beginning of public health.

The specific relationship between local health departments and the State Health Department in California must be understood to appreciate fully the way this problem has been approached.

The local public health departments are autonomous in the planning and operation of their programs, with the State Health Department offering financial assistance but giving no dictation as to practices or policies. There are standards required in terms of kinds of programs offered and kinds of personnel employed, but there are no dictates as to how the personnel are to carry out these programs. However, assistance in program development is offered through consultation services by personnel of the California State Department of Public Health.

In 1946, the state director of the Department of Public Health, recognizing the need for some coördinated work in the field of records and reporting, called together a committee composed of local

* Presented before the Statistics Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

health officers and State Health Department personnel. They were asked to review all the reports presently required of local health departments by the state and federal agencies and to make recommendations for simplifying and eliminating duplication of reporting.

By the fall of 1947, a small dent had been made in solving the problems facing the committee. Up to that time, the committee had reviewed the items taken from all the required reports, plus items from the *Evaluation Schedule* of the American Public Health Association. Their work terminated with the modification of the quarterly report of public health activities long required by the Public Health Service but discontinued in 1947. The modified report did relieve local health departments from the obligation of reporting certain items which were of little or no value. The committee realized, however, that the work which it had done did not really solve the basic problems involved and was only an interim step in a much bigger undertaking.

Meanwhile, in the spring of 1947, a big step forward in public health in California was made possible by the passage of legislation which provided for "state aid for local health administration."[4] Under this Act, there was established a California Conference of Local Health Officers, which was to consist of all legally appointed health officers within the state. Specific provisions were made for the appointment of committees of the conference for the purpose of advising the state director of public health. The conference, through its committees, became the vehicle long absent but necessary to carry out the coöperative action of the state and local health departments. These committees meet several times a year to consider mutual problems of the state and local health departments and to make recommendations for solution of these specific problems. One of the first committees to be appointed was the Records and Reports Committee. The local health officers serving on the previously unofficial committee of the director were appointed as the members.

Also in 1947, a Bureau of Records and Statistics was activated in the State Department of Public Health with the appointment of a chief of the bureau. This provided the necessary administrative coördination of qualified statistical personnel to work with the newly appointed Records and Reports Committee of the conference.

By early 1948, the new committee, together with the Division of Local Health Service and the Bureau of Records and Statistics, had worked out a long-range plan for meeting the records and reporting needs of local health departments. This plan was to include in its implementation the ideas and suggestions of many of the local and state public health personnel within the state. From time to time, representatives of the U. S. Public Health Service and the Children's Bureau contributed to the development of the plan. This detailed project,[5] as set forth in February, 1948, is outlined as follows:

Objective—To devise a system of records and record-keeping and reporting procedures so that records and statistics may be used as efficient administrative tools in the planning and operation of the public health program by local health departments and in the evaluation of the program.

Organization—It is to be a coöperative project of the local health departments and the State Department of Public Health. The local health departments are to be represented by the Records and Reports Committee of the Conference of Local Health Officers. The State Health Department is to be represented by the state Forms Committee and such other personnel as are indicated.

Lines of Action—

1. It is necessary that a statement of specific program objectives, as related to records and reporting, be enunciated, inasmuch as records and reports help to implement the objectives of programs in a local health department.

2. The State Department of Public Health will appoint a Forms Committee. A critical study of all forms now used by the state department of public health will be made. This study will include forms that have been designed by the state for use in local health departments. All forms proposed for future use in local health departments will be reviewed by this committee.

3. A working subcommittee will be appointed by the Committee on Records and Reports of the Conference of Local Health Officers to be selected from the staffs of local health departments. The membership of this subcommittee will include at least a public health analyst, a public health nurse, a health educator, a sanitarian, and a clerk, who will meet at regular intervals in order to carry out the work on records development. A representative of the state Forms Committee will work closely with the subcommittee at each meeting.

4. A study will be made of records and reports presently used in local health departments, in order that past work on the development of records and reporting procedures may be utilized. State Department of Public Health personnel will visit selected local health departments to collect records and reports used in these departments, together with information as to their purpose and use, and any other health department wishing to coöperate in this study will submit a collection of its records and reports.

5. A records manual will be prepared in which will be included all basic records and explanations regarding their purposes and use. This manual will be continually revised and kept up to date.

6. When the major part of this project has been completed, consultation with local health departments in the subject area of records and statistics will be maintained by the State Health Department on a continuing basis.

Results To Be Anticipated—The foregoing integration of action will result in (1) enunciation of objectives for specific programs, (2) development of basic records, which will include items considered important as common denominators in all programs, (3) development of common denominators on records for special programs, and (4) the planning and developing of methods for the recording and evaluation of programs of special interest to each local health department.

Simply stated, the long-range plan was to devise a system of records and record-keeping and reporting procedures, in order that records and statistics would be used as efficient administrative tools in the planning, operation, and evaluation of local public health programs.

Work to Date on the Project—Considerable progress has been made on the project described. During these three to four years, many local health officers have served as members of the committee and have contributed to the work. The Conference of Local Health Officers has assisted through the various committee structures and as a whole in review of the work.

The primary responsibility for the coördination of the work on the project from the state's standpoint has been that of myself as Chief of the Bureau of Records and Statistics and *ex officio* Secretary of the state Forms Committee. Yet, during this period, every state program director and many of the members of their staffs have worked with the committee from time to time in the development of the project.

It became evident to the committee early in 1948 that, before any consideration could be given to the information needed and the records and reporting procedures to be used, the first step was to set down the community-wide objectives of each segment of the public health program of the local health department and, second, the program practices commonly followed by most local health departments in each of these segments. The first large question to be tackled was that of classification of the total public health program into segments or parts, in order that we could define the community-wide objectives of each and the program practices of the

local health department within each part.

It was decided that this classification would not be influenced unduly by previous classifications which had been made. The American Public Health Association's six basic functions were examined, as were the several administrative organization patterns of state and local agencies. None of these classifications appeared to serve the needs of the project, and the classification finally decided upon was: (1) Chronic Disease, (2) Dental Health, (3) Disease Control (including Venereal Disease, Tuberculosis, and Other Communicable Diseases), (4) Environmental Sanitation, (5) Maternal and Child Health, (6) Mental Health, (7) Occupational Health, (8) Physically Handicapped Children, and (9) Registration of Births and Deaths (exclusive of other public health statistics).

Each of these nine segments of the programs was considered to be a reflection of community health needs. Health Education, Public Health Nursing, Public Health Statistics, and Laboratory were considered as service functions which were assisting in practically all the nine segments of classification.

With the classification decided upon, it was then possible to proceed with the delineation of the community-wide objectives and program practices of local health departments for each of these nine segments. The pattern of the development for each segment was similar to that decided upon for Disease Control, which is as follows:

Community-wide Objectives

1. To prevent and reduce disability and deaths from tuberculosis, venereal disease, and other communicable disease by:
   a. Preventing their occurrence or transmission or both
   b. Promoting early case finding and treatment
   c. Rehabilitation where indicated

Program Practices of Local Health Departments

Program practices necessary to aid in the accomplishment of the objectives would include:

1. Those directed toward the *community*
   a. Stimulation and development of a community-wide educational program, with special emphasis on groups with high disease prevalence
   b. Provision and stimulation of screening surveys and other case finding services
   c. Stimulation and development of an adequate community-wide plan for facilities and services for long-term care and adequate preventive, therapeutic and rehabilitation services
2. Those directed toward the *medical and related professional groups* (including hospitals)
   a. Promotion of interest in the program
   b. Promotion of complete reporting by physicians and hospitals
   c. Promotion of utilization of public health laboratory and other diagnostic services for detection and management of communicable disease patients
   d. Distribution of immunizing agents and specific drugs as indicated
3. Those directed toward the *health department staff*
   a. Provision of inservice training
   b. Joint planning for program development
4. Those directed toward the *family and the individual*
   a. Provision of diagnostic services
      (1) Diagnostic and follow-up clinics
      (2) Laboratory services
      (3) Consultation services
   b. Epidemiological investigations
   c. Stimulation and development of adequate preventive, therapeutic, and rehabilitation services
   d. Supervision of isolation or quarantine or both
   e. Promotion of nursing and other health department services

These community-wide objectives and program practices of local health departments, as worked out, were approved by the total Conference of Local Health Officers in their 1949 fall meeting as a suitable guide for the Records and Re-

ports Committee to continue its work.

With these steps completed, the committee was able to concentrate fully on the next part of the project, which was to consider records, reports, and reporting procedures. However, it had already become clear that, before we could do this it would be necessary to describe the information needed within each segment of the program. By this time, there had been developed several basic premises which were to influence this part of the work. These were as follows:

1. That information was needed primarily for the following purposes:

   a. To help define the health needs of the community
   b. To help furnish a basis for program planning to meet these needs
   c. To help measure progress in solving these health needs
   d. To help determine the ultimate effectiveness of health department programs designed to meet these needs
   e. To aid in giving better service to individuals and environmental units
   f. To help provide information needed by the public and appropriating bodies
   g. To aid in the supervision of personnel

2. That the amount and type of information recorded by an individual health department are influenced by department policies, local ordinances, state law, personal interests of the health officer or members of his staff, politics, the number and qualifications of staff members, finances, and many other factors.

3. That it is impractical and unnecessary to count and write down every detail concerning the activities of the health department staff, on either a continuing or a sampling basis.

4. That there is much useful information which the staff of a local health department may use for the purposes listed which need not be continually accumulated. It may often just as productively be recorded in part, e.g., by sampling.

5. That any fair evaluation of the accomplishments of a local health department must take into account facts which are not a matter of numerical record—either in whole or in part.

6. That, cognizant of all these factors, we would delineate only the *minimum information* which should be available from suitable records on a continuing basis, in relation to such parts of the public health program as are commonly in operation, realizing that each individual department will from time to time need many other kinds of data.

7. That the minimum information determined was to be limited to that part of the program for which the local health department has sole or joint administrative responsibility.

8. That this minimum information would form the cornerstone upon which would be built the records and reporting procedures needed by the local health department.

9. That the approach to a delineation of this minimum information would be strictly from the standpoint of local health department needs, regardless of current requirements of state or federal agencies.

Using these premises as a guide, the committee then delineated the minimum information needed by a local health department for the nine segments of the program previously described, with the information under the Disease Control category divided into three segments—Tuberculosis, Venereal Diseases, and Other Communicable Diseases. The pattern of development for each of the classified segments is similar to that which was decided upon for Venereal Disease Control, which is as follows:

Minimum Information Needed by a Local Health Department Staff

1. Cases and deaths
   a. Number of reported cases, by age, race, sex, state of infection, source of report, and place of usual residence
   b. Number of deaths, by age, sex, race, and type of infection

2. Case finding
   a. Number of contacts reported
      (1) Number examined
          Number diagnosed as infected
          Number placed under treatment
   b. Number of other suspects reported
      (1) Number examined
          Number diagnosed as infected
          Number placed under treatment

3. Health department venereal disease service to individuals
   a. Number of scheduled clinic hours held

b. Number of diagnostic observations completed in public health clinics
   (1) Number not infected
   (2) Number infected
   Number placed under treatment
c. Number of diagnostic observations not completed in public health clinics (dropped or transferred)
d. Number of diagnosed cases not attending clinics but seen by health department for other venereal disease service

There were further agreed upon and delineated certain minimum information and data which are utilized in several of the programs and which are as follows:

1. Population

   a. Total population, with all breakdowns available. Data should be available by small areas such as census tracts.
   b. School enrollment, by grades, through high school
   c. Preschool registration by school or school district
   d. Number of families and individuals new to health department this year
      (1) Number of families and individuals "old" to the health department

2. Vital data

   All data should be by place of occurrence and by place of residence. All data should be by calendar year or fraction thereof.
   a. Number of live births, stillbirths, and premature births
      (1) Number of births at home and type of attendant at delivery
   b. Number of deaths by cause, age, color or race, and sex
      (1) Number of maternal, neonatal, infant, and childhood deaths by age and cause

3. Laboratory data

   a. Number of laboratory tests made by public health laboratory, by type of test and results

4. Education data

   a. Number of organizations given help with their educational program
   b. Number of courses, classes, workshops, and other instructional sessions for organized groups at which health department services were given, by type of service and total number of persons attending
   c. Number of meetings, conferences, or institutes for professional staff or other related agencies (e.g., social work and voluntary health agencies) and the total attendance
   d. Number of meetings, conferences, or institutes for health department staff

5. Information concerning available facilities in the community is needed to supplement that information which must be known regarding the programs of the health department. Such facilities are:

   a. All community agencies and organized groups participating in *any phase* of health work
   b. Physicians, dentists, and specialists (by specialty), psychiatrically trained persons, registered nurses, and practical nurses
      (1) Number of meetings, conferences, or institutes for professional groups (e.g., physicians, nurses, dentists, teachers) and the total attendance
   c. Hospitals, including chronic disease hospitals, tuberculosis sanatoriums, nursing homes, and custodial institutions; isolation, maternity, new-born, premature, and pediatric facilities; tumor board, clinic, or outpatient facilities
   d. Registered clinical and pathology laboratories
   e. Newspapers, radio, and other facilities
   f. Industrial plants by type, including number of employees in each plant and type of medical services available
   g. Public building (swimming pools and amusement areas)
   h. Food-handling establishments
   i. Public, parochial, and private schools and their facilities

The minimum information described in the foregoing and the concepts under which it was developed were approved by the full Conference of Local Health Officers during its 1950 fall meeting.

Meanwhile, other parts of the project were going forward. Early in 1948, the state Forms Committee had been set up within the State Department of Public Health. This committee was to formulate policies with respect to an adequate forms control and standardization program and was to have the responsibility for seeing that such a program would be carried out within the department. The responsibility for the working supervision of the program was delegated to

the *ex officio* Secretary (Chief of the Bureau of Records and Statistics). The functions of the Records Review and Consulting Service have since been set up as a responsibility within that bureau in order to carry out an intelligent departmental service in records work *per se*, since it is a highly specialized technique. One of the more important functions of this service is developing patterns of records systems, as well as implementation of principles of good records design for all records used in the State Health Department and for selected records used in local health departments. With this approach, a pattern is beginning to emerge with respect to the records designed by the State Health Department, some of which are used by local health departments.

Work To Do—Other aspects of the project, however, have not yet been fully completed. It is expected that, through the subcommittee structure of the conference, work will go forward in 1952 on the "how" part of the project, that is, in the development of specific basic records and recommended record-keeping techniques.

Uses to Date of the Work Completed—With this material available, the State Department of Public Health saw the possibility of eliminating some of the separate federal and state reports required of local health departments, and of making available to federal and state agencies data not otherwise available.

Some of the statistical data necessary in the planning and operation of a local health program are of value also to the state staff in discharging its responsibility of providing consultation in program development and in administering a financial assistance program. The minimum information needed by a local health department, as developed, was reviewed by each of the state program directors, and certain items were selected for reporting on an annual basis in the annual statistical report. The first such report is to be completed for the calendar year 1951. With this step, several state reports from local health departments were discontinued and negotiations were carried on successfully with federal agencies concerned whereby their needs were met from the information available, at least on an interim basis.

Both the State Health Department and several local health departments are using the data as developed in varying degrees in the review of program activities, in order to improve program direction and incidentally to improve the records and record-keeping techniques involved.

Limitations—There are several recognized limitations to the project, some of which may be noted:

1. The committee is not fully satisfied with the work completed in Environmental Sanitation and School Health and feels that more work needs to be done in these program areas.
2. Not all the needs have been answered by the approach and results to date—some information which certain federal and state agencies feel they need is not available.
3. Not all public health personnel within the state were able to participate, nor were all kept adequately informed of the development of this project.
4. Specific records and methods have not been developed rapidly enough.
5. Reporting procedures have not yet been evaluated in so far as local reporting to the state in specific program areas is concerned.

SUMMARY

We have recognized that there is a need for improvement in records, reports, and reporting procedures in California. This recognition of the need has been reached jointly by the state and local health departments. A long-range plan has been evolved whereby records, reports, and reporting procedures are being developed which will serve as the administrator's efficient, useful tool in program planning, operation, and evaluation, rather than as a millstone around our necks. For the first time in the history of public health in California, the personnel responsible

for program planning and operation of both the state and the local health departments have pooled their resources in an orderly approach toward solving this most complex problem. We believe that through this approach we can solve this problem effectively.

ACKNOWLEDGMENTS—The author desires that adequate recognition be given to Betty King McLaughlin who, as a member of the Bureau of Records and Statistics staff during 1948, 1949, and 1950, carried much of the load in the coördination of the work described; and to Martin Mills, M.D., Edith Young, M.D., and David Frost, M.D., under whose guidance as chairmen of the Records and Reports Committee of the California Conference of Local Health Officers during 1948, 1949, and 1950, the committee completed the major part of the work described. It should be clearly understood that this report is the result of the contribution of many or all of the public health workers in the state and local health departments in California.

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A New Diabetes Journal

Beginning with the January-February, 1952, issue, *Diabetes* was created as the journal of the American Diabetes Association. Its purpose is to "place before the medical profession the latest information concerning diabetes and related aspects of medicine." It replaces the annual *Proceedings* and the quarterly *Diabetes Abstracts*, each of which has been published for the past 10 years.

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Measuring the Quality of Medical Care Through Vital Statistics Based on Hospital Service Areas: 1. Comparative Study of Appendectomy Rates*

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THE changing character of medical and public health problems in recent years has intensified the need for new methods of measuring the quality of medical care. The term "quality of medical care" may mean different things to different people. It is usual to express the quality of medical care in terms of qualifications of personnel, adequacy of equipment, and the technical excellence of medical services performed, and it is assumed that such factors are correlated positively with results favorable to the patient. Granted that a well trained professional staff working in a well equipped and organized institution will deliver a better quality of medical care generally than a poorly trained staff working with inadequate resources, it is true nevertheless that such measurements are at best only relative and indirect, and are not adequate scientific methods.

The old chestnut, "The operation was a success but the patient died," is a homely illustration of the fact that attention is sometimes directed to the wrong criteria of success of medical treatment. The best measure of quality is not how well or how frequently a medical service is given, but how closely the result approaches the fundamental objectives of prolonging life, relieving distress, restoring function, and preventing disability. For example, unnecessary surgical operations, no matter how well done, do not contribute to such objectives, and any considerable number of unnecessary operations for a given disease or condition would indicate a poor quality of care for that condition.

Measurements of quality should be expressed in terms that are uniform and objective, and that permit meaningful comparisons between communities, institutions, groups and time periods, and with general standards. Unfortunately, there are as yet few simple and easy methods to meet the need for such type of measurement, and much thought and experimentation will be required to develop them.

The present comparative study of appendectomy rates in a number of hospital service areas is directed to only one small segment of the whole problem, and there is no thought that the quality of medical care generally can be characterized by the single index of appendectomy rate. This study is but one type of experimental approach to the general problem of methodology, and is the first of a series that have been under-

* Presented before the Medical Care Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 1, 1951.

taken in the hope of developing improved methods of measuring the quality of care of certain hospitalized illnesses through vital statistics based on hospital service areas.

THE HOSPITAL SERVICE AREA: DEFINITION AND USEFULNESS

The hospital vital statistics in this study of appendectomy incidence are based on the general population rather than on hospital discharges, beds, etc. The region covered consists of the 11 counties in western New York State that are served by the voluntary Council of Rochester Regional Hospitals. In the 7,400 square miles of the region, there are 33 general and 14 special hospitals serving a population of 860,000.

Mortality rates for a large number of diseases, and morbidity rates for most of the communicable diseases and for neoplastic disease, are collected by the state department of health for cities, counties, villages, and townships. Medical statistics of the type usually derived from hospital records are not collected, and even if they were, presentation as city or county rates, etc., would not be particularly helpful unless, as in the study of Sinai and Paton, a single county were served principally by one hospital.[1]

The situation was rather different in the region under study. For example, in one county, four different cities or villages had general hospitals. These hospitals varied considerably from one another in respect to size, type of medical staff, and occupation, etc., of the population served. In such circumstances, county-wide statistics based on hospital data would submerge and hide differences that otherwise might appear if the statistics were based on the population of geographic areas principally served by the hospital or hospitals in the locality.

Similar problems are encountered when a hospital's services extend over city, county, or state boundaries.

Studies of the place of residence of all patients, except new-born infants, who were hospitalized in 1946, served to outline 23 distinct and mutually exclusive hospital service areas in this region.[2] Not only the hospitals in the region, but all surrounding hospitals as well, were studied to take into account residents of the region who might have been hospitalized outside. As shown in Table 1, the hospital service areas varied markedly, from one having a population of 3,566 served by a 15 bed hospital, up to the Rochester metropolitan area, having a population of 457,965 and served by six general hospitals with about 1,850 beds. The median is a hospital service area of 17,000 population served by a 50 bed hospital.

The hospital service areas defined by this method of residence studies do not correspond to cities or counties, but their outlines were made to conform to township lines, these being the smallest units for which detailed population data are available through the U. S. Census. With the exception of the three hospital service areas designated as A, G, and O in Table 1, each hospital service area accounted for 75 to 95 per cent of all hospitalizations of persons who resided therein. (The exceptions were due to a very small staff in the one hospital in Area A; to concurrent hospital reorganization in Area G; and to the situation in Area O of a somewhat specialized hospital drawing patients from many states.) The Rochester hospital service area, R, was served by six hospitals; four areas—D, H, T, and W—had two hospitals; and the other 18 had one hospital each. Except in the Rochester hospital service area, almost without exception all physicians active in medical practice are active members of the medical staff of the one hospital, or if two, both hospitals, serving their area.

The significance of hospital service areas for medical care statistics is that

in most instances a hospital medical staff can be held pretty directly responsible for a very high percentage of the medical care given to residents of that area, whether in hospital, home, or physician's office. Once responsibility is fixed, changes that may be necessary can be brought about with relative ease because the hospital medical staff is a well defined group of physicians, subject through their own action and that of the hospital to educational and regulatory influences.

The situation is quite similar in the two-hospital areas described above, but in large communities with many hospitals, hospital service area statistics are not of such direct value. Question may be raised as to the responsibility of local physicians and hospitals for the 5 to 25 per cent of medical care that residents obtain outside of their local hospital service area. In many instances the local physician and hospital must share such responsibility because they will make or should have made the preliminary working diagnosis and referral to the outside physician or hospital.

It has been noted in selected instances that hospitals and their medical staffs have been moved by hospital service area statistics of this type to make a searching investigation and institute educational or disciplinary measures which have resulted in marked reductions in certain types of surgery. This method would seem worth while if it accomplished nothing more than a reduction of unnecessary surgery, but it is hoped that positive results also may be forthcoming; for example, the finding of a delay in hospitalization for early cancer stimulating an improvement in diagnostic ability and facilities.

CALCULATION OF APPENDECTOMY INCIDENCE

The incidence of appendectomies in various hospital service areas was selected as the subject of the first of a series of studies because surgical removal of the appendix is a common operation done almost exclusively in hospitals.* Data were obtained from all hospitals in and adjoining the region. No matter where the operations were done, they were allocated to the place of usual residence of the patient, thus making it possible to compare resident rates. Operations done solely for the removal of the appendix were designated as primary appendectomies and these form the main subject of this study. When the appendix was removed at the time of any other operation, it was classified as a secondary appendectomy.

In making this study, early in 1949, great care was taken to insure that figures for primary appendectomies were complete and that all data were comparable. The project was discussed on several occasions with groups of medical staff members, administrators, and medical record librarians representing the hospitals of the region. With few exceptions, the data were collected in the hospital jointly by hospital personnel, a field worker, and the author. Data from hospitals outside of the region were collected in some instances by the field worker, and in others they were supplied by the medical record departments of such hospitals. In many cases, the operating room journal was consulted originally, and in all cases it was referred to as a check on the index of operations, where such existed. Data recorded on separate cards for each patient included: name of hospital; patient's residence, age or year of birth, and sex; whether primary or secondary

* Appendectomy is an important operation, too. An estimated 600,000 primary appendectomies are done each year in the United States, costing perhaps $100 to $150 million for medical and hospital care, and resulting in as much as $50 million loss of income to wage earners. Six hundred thousand appendectomies would require 3 million or more hospital days, tying up more than 10,000 hospital beds having a capital replacement value of $150 to $200 million. This amount of care would require the equivalent of full-time service by about 2,500 doctors, 6,000 nurses, and 10,000 other hospital employees.

appendectomy; whether recovered or died. A very interested and helpful attitude was shown by all hospitals both in and outside of the region.

Primary appendectomies in 1948 numbered 3,280 among the 857,332 residents of the 23 hospital service areas, a crude rate of 3.83 per 1,000 population per year. In addition, 1,372 secondary appendectomies were recorded in the hospitals of the region, a crude rate of 1.60. The crude primary and secondary rates together were 5.43 per 1,000 population. This figure is roughly one-third of the average birth rate of the past 20 years, suggesting that if the same rates were to hold, the average expectancy of having the appendix removed at some time during life is about one in three.

Table 1 shows for each hospital service area its population and the respective numbers of primary appendectomies done in and outside of the hospital service area. Because the hospital service areas differed somewhat in age and sex composition, rates were adjusted, as shown in column 6, to those that would be expected if the age and sex distribution of each hospital service area were the same as that of New York State at the Census of 1940.

The age-sex-adjusted primary appendectomy rates range from 2.9 to 7.1 per 1,000 population. As a "standard" for

TABLE 1

Appendectomies and Appendicitis Deaths and Population in 23 Hospital Service Areas in and Around Rochester, N. Y.

Hospital Service Area	Population	Primary Appendectomies, 1948			Rate per 1,000		P*	Deaths per 100,000	
		In Area Hospitals	Other Hospitals	Total	Crude	Age-sex-Adjusted		1948	Average, 1944-1948
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A	8,862	3	19	22	2.5	2.9	.50	—	—
B	12,108	30	7	37	3.1	2.9	.43	8.3	6.6
C	13,277	33	4	37	2.8	2.9	.43	4.9	3.6
D	20,620	42	13	55	2.7	3.0	.60	—	2.9
E	8,227	20	4	24	2.9	3.0	.75	—	—
R	457,963	1,402	47	1,449	3.2	3.2	—	1.8	2.8
F	18,906	60	4	64	3.4	3.5	.54	—	1.1
G	18,234	31	21	52	2.9	3.5	.49	5.5	5.5
H	15,249	50	2	52	3.4	3.5	.50	6.6	2.6
I	4,352	12	2	14	3.2	3.6	.69	—	—
J	19,561	62	12	74	3.8	3.8	.17	—	4.1
K	18,081	66	7	73	4.0	4.0	.09	5.5	4.4
L	7,663	23	8	31	4.0	4.1	.25	—	—
M	11,019	33	10	43	3.9	4.1	.16	9.1	3.6
N	7,498	29	4	33	4.4	4.2	.18	—	5.3
O	11,133	21	26	47	4.2	4.5	.04	—	5.4
P	19,877	77	10	87	4.4	4.9	?	—	10.1
Q	24,766	103	16	119	4.8	5.3	‡	4.0	3.2
S	3,566	14	4	18	5.0	5.5	.07	—	—
T	73,718	400	8	408	5.5	5.7	‡	2.7	4.9
U	30,916	189	5	194	6.3	6.2	‡	6.5	4.5
V	17,120	99	10	109	6.4	6.9	‡	—	4.7
W	34,619	229	9	238	6.9	7.1	‡	2.9	5.2
Total	857,332	3,028	252	3,280	3.8	4.0	—	3.3	3.5

* Probability of difference between age-sex-adjusted rate and "standard" rate of 3.2 being due to chance variation.
† Less than 0.001
‡ Less than 0.0001

comparison, there has been chosen the rate of 3.2 per 1,000 among the 457,965 persons in the Rochester hospital service area. This area was chosen because it has a large population, lending stability to rates, and because it contains a medical school and teaching hospital, and several other hospitals generally believed to be well staffed and equipped. Because of the small population groups in many hospital service areas, minor differences from the "standard" may be due to chance variation. The probability that the observed difference was due to chance variation is shown in column 7 of the table. Assuming that probability of 0.05 or less is needed for statistical significance, seven hospital service areas show rates above the "standard" by amounts that are statistically significant.

SECONDARY APPENDECTOMIES

The secondary appendectomy rates in the different hospital service areas were not associated directly or inversely with the primary appendectomy rates for the corresponding areas. The only correlation noted was that the ratio of secondary to primary appendectomy rates increased as the size of the hospital increased. This relationship probably is due chiefly to the fact that relatively fewer abdominal operations other than appendectomy are done in the smaller hospitals, thus limiting the opportunity to do secondary appendectomies. It is inferred also that in the larger hospitals, where the surgical teams are on the average larger, faster, and more skillful, there is a greater tendency to remove the appendix secondary to some other abdominal operation.

The 20 years intervening between the peak incidence of primary appendectomies at age 20 years and that of secondary appendectomies at age 40 makes it seem unlikely that secondary appendectomies can qualify as preventive in any large degree. Ninety-one and six-tenths per cent of secondary appendectomies were in females. The crude rate per 1,000 population was 0.2 for males and 2.6 for females.

RELATIONSHIP BETWEEN PRIMARY APPENDECTOMY RATES AND APPENDICITIS DEATH RATES

The chief purpose of surgical removal of the appendix is to prevent death from appendicitis. In the past, when annual appendicitis death rates were 14 to 16 per 100,000 population, the importance of this disease as a cause of death prompted a rather widely held belief that appendectomy should be done on the slightest suspicion in order to save life, an attitude often expressed among physicians by the familiar, "When in doubt, take it out."

In the absence of contrary evidence, it is assumed that the incidence and severity of appendicitis over the period of one year are approximately the same throughout the rather homogeneous, circumscribed area covered in this study. If the surgical treatment of appendicitis is a lifesaving measure, one would expect to find under these conditions an association of high appendectomy rates and low appendicitis mortality rates.

Such an association is not apparent, however, in columns 6 and 8 of Table 1. In fact, the 19 resident appendicitis deaths reported to the state department of health in 1948 are so few in number that the difference between the combined rate of 2.78 appendicitis deaths per 100,000 population for the eight hospital service areas with the highest appendectomy rates and the rate of 1.75 for the "standard" is not statistically significant. However, if one considers the average appendicitis mortality over the five year period 1944–1948, a statistically significant difference is found between the "standard" of 2.75 for that period and the appendicitis death rate of 5.10 for the eight highest areas.

Of course, it is not known whether the hospital service areas with the highest appendectomy rates in 1948 occupied the same relative position in the four preceding years. It does seem reasonable to infer, however, that within the upper and lower limits of the appendectomy rates observed in this study, a low incidence of surgical operations for appendicitis was not associated with high appendicitis death rates.

COMPARISON OF APPENDECTOMY RATES

In a later section of this paper the possibility is suggested that in the future the surgical treatment of appendicitis may be largely supplanted by antibiotic therapy alone, and that appendectomy may become as obsolete as mastoidectomy. In the meantime, it is necessary to answer the question, "In the present state of our knowledge, what is a reasonable annual rate for primary appendectomy?" The difficulties in answering this question may be eased somewhat by the results of further investigation in some of the hospital service areas studied. For example, the figures shown in Table 1 prompted a study by the medical staff of the hospital serving the area designated as U in the table. They found that among 16 physicians with surgical privileges, one-half of the primary appendectomies were done by only 2, neither of whom received referred cases; and that clear-cut indications for surgical operation were lacking in a large proportion of patients operated on by the 2 physicians. There can be no reasonable doubt that many unnecessary operations have been done on residents of this hospital service area. Similar findings were obtained in several other areas and hospitals.

A curious difference between hospital service areas with high and those with low appendectomy rates is found when urban and rural rates are computed for the six hospital service areas containing cities. In the Rochester hospital service area, the urban and rural appendectomy rates were 2.71 and 2.86 per 1,000 respectively, and average annual appendicitis mortality rates for the period 1944–1948 were 2.73 per 100,000 for the urban population and 2.80 for the rural. The results in Hospital Service Area J were similar, although somewhat higher. In the four hospital service areas having high total rates, the urban appendectomy rate was 8.11 per 1,000 and the rural rate was 3.44. The corresponding mortality rates were 5.26 for the urban and 3.94 for the rural area. This difference in urban-rural rates is not due to different age distribution of the various population groups. A reasonable inference is that in areas served by hospitals where operations are not controlled strictly, the simple fact of greater accessibility to hospital and medical care is a deciding factor.

Few references to appendectomy incidence in the general population were found in the literature. Those that were found tended to correspond with the over-all rates in this study.

In a questionnaire survey of 2,968 college students averaging 19.5 years of age, Stiles and Mulsow[3] elicited a history of previous appendectomy in 9.6 per cent of males and 10.9 per cent of females. Comparable cumulative percentages were developed from the data in this study, using 1948 age-specific rates and New York State life table data.[4] At the 1948 rates, 12.2 per cent of males and 17.2 per cent of females in all 23 hospital service areas would have had primary appendectomy by age 20. In the "standard" area, however, comparable figures were much lower—7.7 per cent for males and 8.4 for females.

The Navy reported for 1949 a total of 3,831 appendectomies in a mean strength of 535,410 persons of median age 23.2, a rate of 7.2 per year.[5] In a 10 year period at the University of Minnesota, Fowler and Boehner[6] found an annual incidence of 4 per 1,000

among 15,000 students averaging about age 20. Such a rate was no more than one-half the actual incidence, they thought, because many students had appendectomies done outside of the student health service. In the Greater Cleveland area, general population rates based on cases confirmed as acute appendicitis by pathological examination were about 1.5 per 1,000 annually in the period 1932–1941, according to Green and Watkins.[7]

There can be little doubt that the "standard" annual appendectomy rate of 3.2 chosen for this study would be considerably lower if only laboratory-confirmed cases were counted, or if the operation were performed only on the strict indications that are observed in teaching hospitals. For example, if the teaching hospital in Rochester is considered to serve a general population group proportionate in size to the number of its general beds, the rate would be only 0.8 per 1,000.

Against the acceptance of such a hypothesis, it may be argued that patients with relatively simple diseases such as appendicitis tend to go to non-teaching hospitals, and that beds in teaching hospitals are tied up by patients with unusual diseases. However, if as many as one-half the beds in the teaching hospital were considered unavailable for simple conditions, the appendectomy rate for the hypothetical population group served still would be very low.

The data available do not provide an entirely satisfactory answer to the question of a "standard" rate, chiefly because the care given by the teaching hospital cannot be related to a population group distinct from that served by other hospitals. A more explicit answer should be sought by studying an area that is served by one hospital which is, or closely resembles, a teaching hospital; or an insured group served by such a hospital. The first type of study seems preferable because it would cover more fully the various age, educational, economic, national, and occupational segments of the general population, and such a study is now being conducted by the author.*

DISCUSSION OF THE METHOD

Vital statistics based on hospital service areas have limited but definite usefulness. At the present time they seem to be best suited to the development and comparison of rates for diseases and operations that are handled almost entirely in hospitals. In the field of surgery particularly, the use of such statistics may point up the need for, and initiate a chain of events culminating in, the reduction of unnecessary surgery. A shortcoming of the method is found in large cities and other hospital service areas served by several hospitals, in which case it seems impossible to relate the service of one hospital to a population group not served to any great extent by other hospitals in the area.

In this study, epidemiological factors of age and sex were explored to bring out the differences, if any, between hospital service areas with high and with low primary appendectomy rates. It was hoped that if characteristic differences appeared, they could be applied directly to the data for an individual hospital to indicate whether the number of appendectomies probably was too high or low. Unfortunately for this purpose, age distribution was not characteristic for any one type of area, and the preponderance of females in the high appendectomy rate areas as opposed to the other areas (57 per cent females in the "high" areas, 52 in the "standard" area, and 48 in the teaching hospital)

* Data now available permit calculation of the crude primary appendectomy rate among the 18,000 persons residing in the Cooperstown, N. Y., hospital service area served primarily by the Mary Imogene Bassett Hospital. The annual average resident rate over the five year period 1946–1950 was 1.9 per 1,000 general population. Of the 171 primary appendectomies on which this rate is based, 81 per cent were done in the Mary Imogene Bassett Hospital, and 19 per cent in hospitals outside of the Cooperstown hospital service area.

was not sufficiently large and consistent to be helpful.

Outlining hospital service areas and obtaining data for comparative rates on diseases and operations involves considerable field work and requires the coöperation of a number of surrounding hospitals. The time and effort involved are not beyond the resources of the average hospital service area, but the work is of course greatly reduced for all if a number of adjoining areas and their hospitals participate. There may be reluctance on the part of some hospitals to open their records to study by the representative of another hospital, and for this reason it would seem desirable to have studies made under the aegis of a hospital association, educational institution, or state agency. To obtain uniform data it is desirable that the initial studies throughout the area or areas be made by one individual who would visit the various hospitals, but it seems probable that subsequent studies of the same type could be made simply and cheaply, with little or no field work, through reports by hospitals to a central agency.

THE ROLE OF SURGICAL OPERATION IN THE TREATMENT OF ACUTE APPENDICITIS

Some of the data cited earlier suggest that the influence of appendectomies on appendicitis death rates generally is not clear beyond question. Seeking further information on this subject, the reports of the New York State Department of Health, and the Metropolitan Life Insurance Company,[8] were consulted with the results shown in Figure 1. Data from several other cities and states also showed the same striking, downward trend in mortality in recent years. This trend, associated with the antibiotic era, also raised the question of the efficacy of surgical operation in the treatment of acute appendicitis.

Appendicitis as an important disease entity first began to attract attention about 1886, following the report of Fitz.[9] The dramatic nature of the disease soon gained wide professional and public attention, and it would seem that recognition of deaths from this cause should have been reasonably complete in the early 1900's in view of the fact that surgical operation offered a ready means of verification of diagnosis. Nevertheless, a steady increase in mortality was noted, from an average of 10.7 per 100,000 population for New York State in the period 1900–1904, to a 15.4 average in 1930–1934. The increase may well have been only apparent, in view of improved diagnosis in recent years; the true cause probably will never be known. A slight decline occurred around 1933 or 1934, following an all-time high in the years immediately preceding. This first decline may have been due to improved surgical treatment, especially in the relief of intestinal distention, and correction of water and electrolyte imbalance, or it may have been due to unknown causes that produced decreases in the 1907–1910 and 1916–1919 periods. However this may be, the death rate has fallen precipitately since the sulfonamides and other antibiotics became available.

What was the value of surgical operation up to the advent of the antibiotic era? The great majority of physicians seem to have felt that appendectomy was a lifesaving procedure, and believed much as Homans did in 1932 when he wrote, "There is now no question of the value of early operation, nor is the physician backward in promptly recommending it."[10] But some doubt existed. After quoting Willis[11] to the effect that apparently the mortality of the disease was not diminishing, Homans went on to speculate over this paradox of increasing mortality with increasing surgical treatment: "The reason lies perhaps in the inherent difficulty, in many instances, of making a diagnosis,

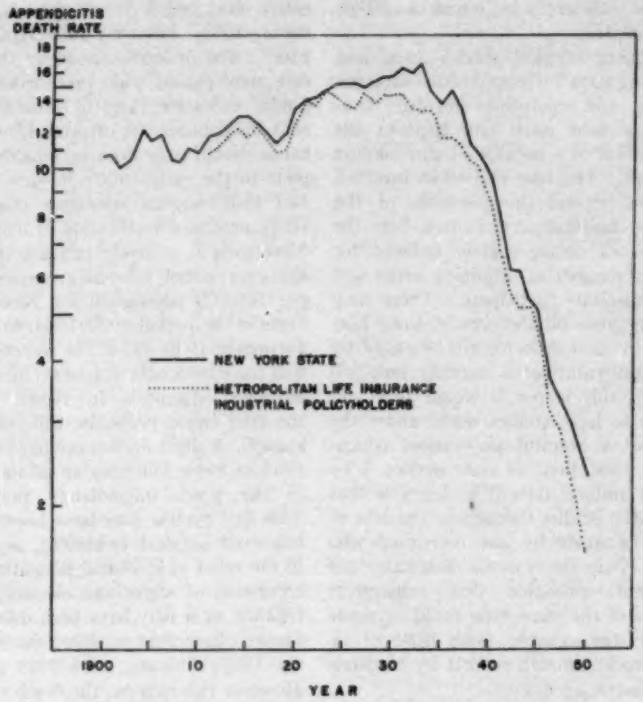

FIGURE 1—Appendicitis death rate per 100,000 population, New York State, 1900–1950, and Metropolitan Life Insurance industrial policyholders, 1911–1950.

and in a false feeling of security, on the part of many persons, lay and medical, that the problem of appendicitis has been solved."

At the same time, there were a few clinicians who felt that surgical operation tended to spread infection that had reached the peritoneum, and that severely ill patients did not tolerate well the shock of operation. Reynolds reports that the Ochsners, father and son, were outspoken in favor of conservative treatment in the presence of active infection of the peritoneum.[12] Adams and Bancroft[13] felt that conservative treatment of appendiceal peritonitis in children at the University of Minnesota was responsible for reducing the case fatality rate from 10.1 per cent in 1920–1929 to 4.5 per cent in 1930–1934. (They did, however, remove the appendix after active infection had subsided.)

Looking backward from today's vantage point, it seems unlikely that surgery alone contributed much to the reduction of appendicitis mortality. It seems more likely that, in the earlier years, general supportive treatment such as prevention of dehydration, relief of abdominal distention, and good nursing care may have been of benefit, as it was in many other types of infection. Substantial reduction in appendicitis mortality appears to be attributable almost

entirely to treatment with the sulfonamides and other antibiotics. In the Navy in World War II, when surgical facilities were lacking, appendicitis was often treated successfully with penicillin or other antibiotics only.[14, 15] Recent studies such as those of Yaeger, Ingram, and Holbrook [16] on aureomycin in experimental peritonitis in dogs; Yaeger, Lynn, and Barnes,[17] Crile,[18] and Joslin and Drake [19] on the use of aureomycin and penicillin in peritonitis of appendiceal origin in children and adults, strongly support the importance of the antibiotics, even though most of the human cases were subjected to surgery routinely, without regard to presence or absence of abscess, after antibiotic therapy was completed.

The question of whether surgery is needed in addition to antibiotic therapy is still open. As was true of the early advocates of conservative management, Crile and Fulton [15] seem to feel that surgery may be dangerous where the peritoneum is involved. They point out that in the majority of cases, acute appendicitis is self-limited and subsides spontaneously and completely in 48 hours. They consider that the majority of so-called "ruptured" appendices are periappendiceal abscesses that are ruptured by the surgeon during the operation. Also, they believe that if the patient is first seen when the infection has extended into the free peritoneal cavity, immediate operation is unlikely to improve chances of recovery. These observations and inferences suggest that surgical treatment of appendicitis should be required only rarely because, according to Crile,[18] only 5 per cent of cases go on to the stage of appendiceal peritonitis, and if treated with antibiotics only one-half of the peritonitis cases will require surgical treatment—usually for drainage of residual abscess. It seems possible also that considerably less than 5 per cent of cases of acute appendicitis would progress to peritonitis if they were treated promptly with antibiotics. Surgical treatment for the relief of symptoms due to fecaliths, stenosis, or external constricting agents should be required very rarely, according to Jennings, Berger, and Jacobi,[20] who found only 14 such cases in a total of 1,680.

The findings of this study, and the publications cited, are interpreted as strongly suggesting that the antibiotics are the essential factor in successful treatment of appendicitis with peritonitis, and uncomplicated appendiceal infections as well. In view of the possibility of a great reduction in the amount of surgical treatment of appendicitis, with all of its attendant benefits, controlled clinical study is proposed to compare the efficacy of antibiotic therapy alone with the efficacy of surgical treatment with or without concurrent antibiotic therapy.

SUMMARY AND CONCLUSIONS

1. Resident vital statistics derived from hospital records and based on the total population of a hospital service area represent one useful type of measurement of the quality of medical care. Clearly demarcated, mutually exclusive areas served principally by one or more hospitals can be defined by residence studies of hospital patients, and detailed population data for such hospital service areas can be assembled from that supplied by the U. S. Census for small subdivisions.

2. The outstanding values of resident vital statistics based on hospital service areas are: (1) rates are comparable between areas and with a standard; (2) responsibility for results is associated closely with the hospital medical staff and governing board; (3) the likelihood of corrective action is enhanced by the objectivity of the rates.

3. This method is best applied to diseases and operations associated almost exclusively with hospitals. Limitations on the effectiveness of the results are encountered when a hospital service area is served in large part by several hospitals.

4. Application of this method to a study of primary appendectomies in 23 hospital service areas would seem to indicate that considerably more operations of this type are done than are necessary in the light of our present knowledge—excesses of from 25 to 100 per cent in various areas.

5. The findings of this study, together with

observations by others reported in the recent medical literature, are interpreted as showing that the antibiotics are the essential factor in the currently successful treatment of acute appendicitis, with or without peritonitis, and that the value of surgery is questionable in most cases. In view of these findings, a controlled clinical study of the relative efficacy of surgery with or without antibiotic therapy, and of antibiotic therapy alone, is recommended.

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Tuberculosis Laboratory Diagnosis

Two series of courses in the laboratory diagnosis of tuberculosis are being given during 1952 by the bacteriology laboratories of the Communicable Disease Center at Chamblee, Ga., in coöperation with the Public Health Service's Division of Chronic Disease and Tuberculosis. One series is open to all laboratory personnel approved by their state health officers and will include all phases of tuberculosis bacteriology. This series will be given April 14–25 and November 10–21.

Two similar courses will be given for laboratory directors and senior staff members, physicians, and others of comparable professional standing. Dates for these are May 19–23 and November 3–7.

No tuition or laboratory fees. Reservations should be made well in advance. Officer in Charge, Laboratory Training Services, Communicable Disease Center, P. O. Box 185, Chamblee, Ga.

Medical and Public Health Man Power*

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WE, in Britain, have become accustomed to the idea of rationing of food and other commodities. Some of us are beginning to think of the need to ration man power as well, and I believe that this thought is also beginning to exercise the minds of those in the United States.

An examination of population statistics in Britain shows that our working population, while going up slightly, will be more or less stable and that we shall be faced with an increasing shortage of women.

There does not appear to be any hope of an improvement so far as young people are concerned. If you look at the number of boys and girls reaching the age of 15 years, you will find that 635,000 will attain this age in 1951, compared with 740,000 who reached the age of 15 in 1939—that is, there are over 100,000 fewer boys and girls reaching the age of 15 than before the war. This position will not begin to improve until 1957. If you take the number of boys reaching the age of 18 you will find that 420,000 in 1939 reached the age of 18; in 1951 only 310,000 will have reached that age—a drop of 110,000. The figures for girls are similar. The position will not begin to improve until 1960 and we shall be faced with a serious shortage of young people for the next ten years.

The aging of our population may be illustrated by the following figures: In 1911, 53 per 1,000 population were 65 years of age and over; in 1947, 105 per 1,000 population were 65 years of age and over—twice the number in 1911; and in 1977, 160 per 1,000 population will be 65 years of age and over—three times the number in 1911. This gives an indication of the increasing numbers of elderly people that will have to be carried by the working population in Britain.

We shall find, too, that the number of people aged 20 to 40 in the working population will fall by about 7 per cent over the next ten years, while the number aged 50 to 60 in the working population will rise by more than 20 per cent. This is an indication of the aging of the working population. And then again there will be a decrease during the next ten years of nearly half a million—485,000—in the number of women in the age group 18 to 30. This means that the field of recruitment for young women will shrink during the next ten years.

Out of the diminishing pool of young women in Britain we shall have to recruit more nurses, more teachers, more domestic science teachers, more radiographers, more records officers, more physiotherapists, more dietitians, more catering officers, more chiropodists, more dental mechanics, more dispensers, more mental health workers, more psychiatric social workers, more laboratory technicians, more occupational therapists,

* Presented before the Health Officers Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 1, 1951.

more speech therapists, more orthoptists, more almoners, more shorthand-typists, more doctors, more pharmacists, more physicists, more biochemists, more remedial gymnasts, and indeed more of every professional class of women. All this from 25 per cent fewer women.

We may well ask ourselves whether we in the medical profession have not set a bad example, whether we have not been extravagant in our standards of man power—I use the term man power to include women as well as men.

Every new creation of medical specialist of any kind not only multiplies the medical profession but also, almost in geometrical progression, the numbers of nurses and medical auxiliaries who must in one way or another assist the new specialist in his work. The question inevitably arises whether the modern ultraspecialization of the medical profession has justified itself in results.

It would be interesting if we could have statistics to show that the female pelvis is any better cared for by the gynecologist of today than it was in the old days by the general surgeon; or that the child at all ages is any better cared for by the pediatrician than he was by the old general physician. We may broaden the issue still further by asking ourselves whether any patient today is as well looked after by a different specialist for every single one of his organs as he was in the past by the old-time family physician who treated him as one whole human individual.

Nor in the field of preventive medicine have we been guiltless of overspecialization. We have created a system of factory doctors and factory nurses doing work which could have been done better by public health physicians and public health nurses.

It may not be possible to put back the clock in the face of world tendencies of development in medical technology, but at least the people of the United States have still the opportunity to avoid the worst extravagances in man power that have resulted in Britain from the advent of the National Health Service. Throughout that service the standard of medical staffing seems to be based numerically on the very highest that was adopted for the best teaching hospitals, regardless of the varying needs of individual hospitals (including nonteaching hospitals) throughout the country. Hospital consultant staffs are employed at least three times as large as those engaged even by the most progressive local authorities when they had charge of hospitals. The employment of a large consultant and specialist staff involves, as a necessary consequence, the presence of many more subspecialists or trainee specialists, registrars, interns, nurses, and technicians. Records officers do work that was formerly done by clerks, and theatre technicians specialize in duties formerly carried out by general duty hospital porters.

On the administrative side, the same tendency toward unnecessarily high standards is shown, but further than that, the form in which the British National Health Service is cast renders inevitable the multiplication of administrative and clerical staffs. For England and Wales (population 43,744,924), there are 14 Regional Hospital Boards and nearly 400 hospital management committees each with a secretary, finance officer, supplies officer, and a relatively large supporting staff. The number of hospital management committees seems unnecessarily large. Economies also could be effected in the staffing of these bodies, which now employ many times the number of officers and clerks thought necessary when the regional hospital beds were administered by the local authorities.

But to tell you what mistakes to avoid may seem a somewhat negative approach to a problem for which the urgency of the hour requires constructive proposals.

In the public health field, I believe

that the biggest man power economy can be made by merging as fully as possible the greatest variety of jobs. In rural areas, the public health nurse can be a combined home nurse, health educator, maternity nurse, and (in Britain) midwife. In towns, the public health nurse, who is primarily a health educator, can educate for self care patients suffering from various diseases, thus saving hospital beds, with all that that means in savings of medical and medical auxiliary man power, as well as time and therefore man power of the family physician.

In Cardiff we are developing a system of hospital follow-up, with education for self help in the home, in cases involving diabetes, peptic disease, tuberculosis (including BCG vaccination), pediatrics, premature birth, asthma, mental deficiency, and mental health. Our system is that public health nurses, specially trained for the work, visit hospitals and outpatient departments to act as liaison officers between the hospital staffs and the district public health nurses. So far as practicable we shall train all our staff of health visitors to do this work in turn, because it provides an excellent form of postgraduate training. I am very glad to have this opportunity to acknowledge to an American audience that although I started the scheme for diabetics in 1944, the latest development, for mental health liaison through a mental-health-trained public health nurse, was inspired by reading in the American *Public Health Reports* an account of the program at the Prince Georges County Mental Health Clinic.

I believe that using the public health nurse in this mental health assignment, as well as having its intrinsic value, carries the additional advantage of saving man power in the field of the psychiatric social worker.

I believe, too, that our Cardiff scheme of hospital follow-up through public health nurses could be linked up admirably with any imitation which might be made in the Cardiff area of the famous Montefiore Hospital program, a program which I have greatly admired since I first heard of it.

I want to suggest further that in these days of growing "welfare" services of every kind, the use of the public health nurse can be extended in that field also. She by her training appreciates the need of promoting the welfare of the family as a unit under all circumstances—in infancy, during school years, in adult life, during short-term sickness and long-term disability. She should be the general adviser in behalf of the family physician and the local authority, a link between them both and the hospital authorities.

While the general body of routine welfare work should be undertaken by the health visitor, she should in turn be able to call upon, or consult with, the general practitioner, the medical officer of health, and the specialized welfare workers as and when required. For example, the routine statutory visiting of mental defectives could be carried out by the health visitor in her area. She would call in the general practitioner, the psychiatric social worker, or the duly authorized officer when difficulties arose needing the specialized knowledge and experience of these workers.

There is no reason why the routine visiting of the blind and other disabled persons should not be a function of the health visitor, leaving the home teacher for the blind to carry out the specialized teaching and welfare work for which she has been trained. In such ways a homogeneous welfare service could be provided, one which the family physician could understand and assimilate as part of family medical care. In this way only will it be possible for a comprehensive and integrated welfare service to develop.

If it be admitted that continued expansion of the field of the public health nurse, even though constituting an overall and long-term saving in man power

generally, may temporarily embarrass the health nurse service by making demands upon it which it cannot for the moment satisfy, I think the answer is to permit her to be assisted by persons with shorter and less arduous training than hers, who could nevertheless carry out some of the more routine duties now undertaken by the health nurse herself, leaving her to undertake more of the new duties, such as care of the aged and disabled, of ex-hospital patients, and of mental health cases.

With help of this kind, health nurses could also take on welfare supervision of problem families, including care of the deprived child, i.e., the child deprived of normal affection and psychological security in his own home.

Here again, in the United Kingdom we have been wasteful of man power by setting up new departments of central and local government, served by large numbers of new officials—all for the sake of (compared with the total child population in Britain) relatively a handful of ill-treated or neglected children. The efficient care and welfare of these children could perfectly well have been compassed through the existing machinery of central and local government, notably the health departments, which in fact were already carrying out faithfully and well an important part of the work.

In Cardiff we save the time of the fully trained health nurse by employing, in the home, domestic helps, and at the clinics, clinic helpers.

Domestic or home helps employed by local authorities are cook-general-housekeeper motherly types of womanhood who run homes where sickness or maternity crisis has wrecked the normal domestic machinery. We employ 100 in Cardiff for a population of 240,000, with a density of 16.15 persons per acre.

For our six main clinics (one to 40,000 population) we employ 5 clinic helpers. These are women who are not state-registered or college trained, but they have had some training in practical nursing. Most of them are State Enrolled Assistant Nurses and all have practical common sense. They relieve trained public health nurses of duties at the dental extraction clinics; they help school nurses on visits to schools for cleansing surveys and for weighing and measuring children; at child welfare clinics they help keep the case records and help generally with the work of the clinic, such as marshaling the people in the waiting room; at the cleansing stations, they undertake the treatment of scabies for both patients and contacts, also verminous school children.

To assist the dentists at the clinics we no longer, as formerly, employ a fully trained public health nurse, but a dental clerk-attendant—a girl who has had some experience of nursing, so that she is not afraid of the sight of blood, and who has had some experience of clerical work, so that she can keep the dentist's case records, and also make out and mail appointment cards to his patients.

At each clinic we employ also a clerk-telephonist, who is an essential time-saver for public health physicians and nurses. Her duties include the selling of infant foods, cod liver oil, and orange juice.

There is probably no need to remind Americans that the time of all public health personnel and therefore man power can be saved by adequate and efficient transportation!

To fulfil the ever-increasing responsibilities for the care of the handicapped, the chronic sick, and the aged, I believe we shall have to draw more and more for help to our trained staff upon voluntary organizations, including church workers and, in Britain, the W.V.S.

For the chronic sick and the elderly who cannot be cared for in their own homes, an enlightened policy of hostel provision, including "mixed" accommodation for "Darby and Joan" couples,

can do much to save institutional and hospital beds with their trained staffs. I believe more could be done to save beds in institutions for mental defectives by providing hostels where they could live under the care of a warden with appropriate staff assistance, while licensed by the institution to go out to work daily and returning to the hostel at the end of the day.

Of inestimable value in saving medical and public health man power is a successful program of popular health education. We find in Britain that the average young mother needs far less teaching of mothercraft from our public health nurses than she did twenty years ago and we put that down to the success of popular health education.

In Britain, our Nuffield Trust has recently undertaken a job analysis both of hospital and public health nursing. A governmental job analysis is also now being made of the work of sanitarians. The results of these analyses, it is hoped, will lead to substantial savings of man power in the public health field.

The call to civil defense brings a sense of urgency to all considerations of medical and public health man power. Peacetime programs for infectious disease control and sanitation may be stretched by wartime complications such as the mass evacuation of urban populations, with consequent need to set up emergency arrangements for communal housing, feeding, water supplies, and refuse and sewage disposal. In all such arrangements there may also be the need to guard against or deal with the results of sabotage, including infectious disease warfare. Other civil defense problems that come to mind are the sanitation of public shelters and the disposal of the dead.

Public health personnel, including physicians, engineers, sanitarians, and nurses, all need to be trained in advance to meet such eventualities so that there shall be no confusion when the time comes and everyone will take his place in an orderly program.

To deal with air raid casualties, the hospital authorities have the prime responsibility, but in Britain the ambulance services are controlled by local authorities, who will also be called upon at need to provide stretcher bearers for on-the-spot help to the hospital-based first aid parties.

In Cardiff during the last war we secured economy in man power and efficiency by delegating on-the-spot first aid to the Warden's Service and to local family physicians. Wardens were trained in first aid by members of the Casualty Service. Invariably the wardens were the first arrivals on the actual scene of damage, and in appreciation of this fact, additional first aid equipment was provided over and above the recognized amounts centrally allocated for each warden's post. This was done by local purchase. A stretcher was distributed to each warden's post, which enabled the wardens to remove casualties to cover, there awaiting the arrival of ambulances. Family physicians were asked to volunteer to assist the Warden's Service for the area in which they were living. Each physician was given a haversack containing emergency treatment requisites.

This provided a very effective organization and was of great help to the Warden's Service, especially when communications became in any way delayed. The Cardiff scheme was soon adopted by many other authorities and it seems to me that it might well be extended to home nurses wherever these, like the family physicians, serve and live in a definite area. The same principle holds: through persons trained and "strategically" placed as they are, you have on-the-spot quality first aid without the delay and waste of man power necessitated in waiting for organized first aid parties or in sending the patient to static first aid posts. Patients dealt with where

they lie by wardens, family physicians, or home nurses can then be rushed straight off to casualty clearing stations (Casualty Transit Centres, we now call them in Britain) or hospitals.

A further development of the same idea is to have as many as possible of the entire population trained in first aid so that unwounded survivors can help the wounded immediately after any incident and give on-the-spot aid without having to depend on "official" first aid parties, physicians, or home nurses, who may already be busy elsewhere.

As no nation has a greater tradition of self help with self-education and voluntary service than the United States, it seems to me that Americans are supremely well equipped, if they have not already done so, to foster developments in civil defense organization of the kind I have been describing.

Court Decision on Undulant Fever

The Washington State Supreme Court has handed down a decision awarding damages for undulant fever contracted as a result of handling cattle infected with Bang's disease. The case involved a farmer who bought a dairy herd represented as Bang's-free, although at the time of sale it was under a U. S. Department of Agriculture quarantine. After a year the disease had spread through the herd and the farmer became ill with undulant fever. The trial court's award of nearly $10,000—$5,000 damages to the farmer for having contracted undulant fever, $3,158 for loss of milk production, and $1,418 for the difference between what the farmer paid for the herd and what he received when the animals were sold for slaughter—was upheld by the higher court. Thus the public health dangers of brucellosis have become established by legal precedent.

The Place of Nutrition in the Health Education Program*

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NUTRITION education is more than propaganda for better food habits. Nor is physical well-being enough; growth of body, mind, and conscience is the goal. The possibilities of improvement of family, community, and world conditions through food, the use of nutritional knowledge for man's welfare is a vision all must catch. Youth today must see relationships, relate cause and effect, observe, study and analyze situations and problems and decide what they and society can do to correct conditions. A mass of facts about nutritive values and recommended allowances is no more nutrition than a pile of lumber is a house. The value of knowledge lies in its possibilities. What can be done with it is all-important.

Children's immediate needs are of course the school's first task. If they have been well nourished before birth, during infancy, and through the preschool years, the school's task is relatively simple. It needs only to give them valid reasons for continuing their good food habits; set the school lunchroom stage properly and keep them from being tempted to eat at odd hours, to buy candies and soft drinks.

If children lack color and pep, the elementary teachers can often discover inadequacies by using indirect methods such as the drawing of pictures of what they had for breakfast, spell what they had for dinner, or compare their meals for a day with those of some child in a land where food is not abundant. These indirect methods are wiser and more revealing than having children or their parents record their meals for the enlightenment of the nutritionist or the school nurse. These methods lead to less parental antagonism and less lying. If there is evidence that children are not eating properly, they must be subtly encouraged to mend their ways. If fruit is not being eaten, serving midmorning fruit or fruit juices, even cooking their own prunes or apple sauce on a portable burner, will give them a chance to learn to like fruits. The mere fact that the teacher is interested in what they had for breakfast may be all the encouragement they need. A warm friendly person interested in them will accomplish more than high powered demonstrations or convincing arguments. People given too much advice will either reject it completely to show their independence or else become health conscious and feel dominated by nutritional rules to the point of becoming neurotic.

Teaching nutrition is an art. The artist suggests and lets his audience do the rest; he never expects identical responses. A controversial problem suggested by a teacher that gets a response bears more fruit than facts drilled in and hammered down.

Instead, therefore, of regaling students with food values, or functions, or asking

* Presented before a Joint Session of the Dental Health, Health Officers, and School Health Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 1, 1951.

them to record their own food intakes, teachers from the second grade to graduate school might well start with the question, "Why aren't all of us in America well fed? Why with our agriculture, our food industries, our markets, our excellent food laws and a government that helps needy families are any of us undernourished? Why, with parents and school lunches to provide for us, are any of us poorly fed?" The children will probably bring forth these answers:

People dislike food that is good for them.

Foods cost a lot, particularly those we like best.

Sweets, soft drinks, coffee, and candy appeal to people more than fruits, vegetables, milk, and whole grains.

Other things like cars, clothes, gadgets, and recreation mean more to some than food and health. Money is not available for everything.

We expect doctors and miracle drugs, not food, to keep us well or make us well.

Food is not well cooked, so it is not eaten.

Food is often overcooked or overprocessed so essentials are lost.

People would rather sleep late than get up and eat breakfast.

Children get so much advice about food from their parents that they just get stubborn and will not eat healthful foods.

High school girls eat pie and ice cream for lunch instead of a decent meal, because it is the *done* thing.

High school boys refuse salads, soups, and vegetables because they like he-man food.

Possibly the land on which food is grown is run out—lacks essentials.

People do not know how to choose the right foods, to make them hale, hearty, and happy. They need educating.

Folks will not eat food that is unfamiliar to them.

After a lively discussion and an assignment to observe friends and family, the conclusion is reached that in America good food is available for all, but people do not eat the right foods because of mental quirks, laziness about learning food values, because there are many tempting overrefined, highly processed, not too healthful foods on the market, and because people are unwilling to budget enough for food, prefer luxury buying. Economic need is rarely a cause of under-nutrition today.

The teacher might add that Americans spent 14 billion dollars annually on tobacco, alcohol, and headache relievers, at least 30 per cent of the amount spent for food. Carbonated beverages are not included. Even little children may see that incomes might be spent more wisely.

Obviously, the next problem is how to make students see the importance of food for efficiency, sane adjustment, long life, and happiness. They can discuss whether people apply what they know; whether those on lower incomes would buy the less expensive, equally nutritious food if they knew food values; whether better cooking and happier mealtimes at home and school would be effective; whether adult example is all-important; whether early handling and training in infancy determine later choices; whether the drive to do as others do, eat the more expensive foods, even to waste money on soft drinks, candy, tobacco, alcohol, and luxuries is stronger than desire for good health.

All will see that food habits are not easily changed, that though the flesh may be flabby, the spirt is weak. They will see that people who refuse food may want attention, sympathy, or an argument, that they may be beset by fear of ill effects of food or of wasting money on something they do not relish. They will note that some refuse because they like to be considered connoisseurs. They may conclude that refusal of good food shows childishness or limited social experience, or that the home diet is rather limited. They may thus be brought to see that acceptance of the food offered shows courtesy, a healthy curiosity and willingness to accept new ideas as well as social experiences. Encouraging food acceptance justifies the time spent because wives and institutional managers would lead happier lives.

In such discussions the problem of

food faddists and over-gullibles will rise, and the class must consider how people can be kept from accepting half-truths from some advertisements or ridiculous advice from quacks. Classes may well consider the effectiveness of advertisers, the power in their hands, how many more million people they reach than schools, and how essential it is that advertisers be ethical, honest, responsible citizens.

Children should be led to analyze the techniques of advertisers, their subtle ways of playing on pride, prestige, superior judgment and fear, so that they not only build defenses against them, but learn their appeal technics.

The next problems are whether American food habits should change, how many of us eat as experts advise, and whether nutritional knowledge if applied would improve health. Statistics may have a telling effect here. Only 3 per cent of our infants die, but 25–50 per cent die in world areas where diets are inadequate. Length of life in America is twice as long as countries where diets are poor. The resistance to illness of those who eat well is greater from cradle to grave. The well fed are youthful longer, they are larger and stronger. On the negative side they must see that many in America are nervous, high strung, easily discouraged, cynical. Many adults are too fat and many are not fit, many feel need of constant stimulation, cigarettes, and mid-morning coffee.

They must see that with better breakfasts there would be little demand for midmorning snacks. With more satisfying lunches, dinners could be lighter and as a result people would be intellectually more alert in the evening. They should learn early that our futures depend on how constructive our evenings are.

The next question for consideration is what constitutes satisfying balanced meals. Textbook assignments have a place here and show how to select protein, minerals, vitamins, and calories. From their texts they discover that tempting sweets and other highly refined foods provide little protein, mineral or vitamins, only calories, and that fruits, vegetables, milk, meat, and whole grain products must be included regularly and generously.

Elementary and junior high school children can easily learn what constitutes good meals if the nutrients in servings are expressed as a fraction of the day's needs. Dividing circles or pie charts into segments showing how much of the daily requirement is supplied by each food eaten is enlightening. For example, if elementary school children decide that their protein requirement is around 65 grams, they might be given the table which follows and told to calculate and show graphically whether they were getting enough. Tables such as the following, showing the amount of the nutrient or the percentage of the daily requirement or both, would be given as source material for children to calculate the adequacy of their own diets. In the margin they would show what part of their requirement each type of food supplied, and would blacken the area where their requirement was not met.

Countless figures discourage those who are trying to learn nutrition and they actually have little value. Since foods vary markedly because of differences in seeds, breeds, season, age, climatic condition, processing, cooking methods, extent of waste in preparation, round approximate numbers should be used in calculating the nutrients in dietaries. Meat varies in fatness with the grade, the trim, the cut, and the method of cooking. The milk served may be partially skimmed and may be from one to four per cent in fat content, which makes a difference of 60 calories per glass. Fifty per cent of difference in the vitamin content of a vegetable or fruit is not

unusual due to growing conditions, and processing and cooking widens the difference.

Furthermore, people of the same age, weight, sex, and occupation differ in their nutritive requirements because of present rate of growth, past inadequacies and degree of utilization. No one can know their exact needs, so approximate figures are just as accurate. Years ago a student of mine, after having meticulously calculated an infant's need and the adequacy of his formula, said sadly, "Unless my husband is a mathematician my baby will die." Many have made nutrition so complicated that instead of giving people a sense of mastery over their health and well-being, they have become neurotics or have resorted to vitamin pills for rounding out their diets.

Teaching anything in nutrition with finality is unwise. The recommended daily allowances will change as we learn more about vitamins, amino acids, trace elements, balance and interrelationship of nutrients. Today no one is sure how

Grams of protein in foods and per cent of recommended daily allowance:

Requirement	*Grams* 64	*Per cent of Requirement* 100
1 serving meat	16	25
2 cups milk	16	25
6 slices bread and a cereal	16	25
½ cup cottage cheese	12	18
1 egg	6	10
1 inch square cheese	8	12
meat substitute	12	18
3 servings vegetables	6	10

Grams of calcium and per cent of recommended daily allowance:

Requirement	1.00	100
2 cups milk	0.56	56
1 inch square cheese	0.20	20
½ cup cottage cheese	0.06	6
1 egg	0.03	3
1 serving green vegetables	0.10	10
1 serving root vegetable	0.02	2
2 servings fruit	0.02	2

Milligrams of Vitamin C in foods and per cent of average daily requirement:

Requirement	*Mg.* 70	100
½ c. orange or grapefruit juice	45	66
1 serving cabbage, raw broccoli, fresh tomato	20	20
1 serving berries	20	20
1 medium new potato	30	30
1 old potato	10	10
1 root vegetable, parsnip, turnip	10	10

Units of Vitamin A in foods and per cent of recommended daily allowance:

Requirement	*Unit* 5,000	100
2 cups milk	900	18
1 oz. butter or 1 oz. margarine	900	18
1 egg	450	9
1 inch square cheese	400	8
1 serving yellow or green vegetable	4,000–12,000	80–240
1 serving liver	20,000	400

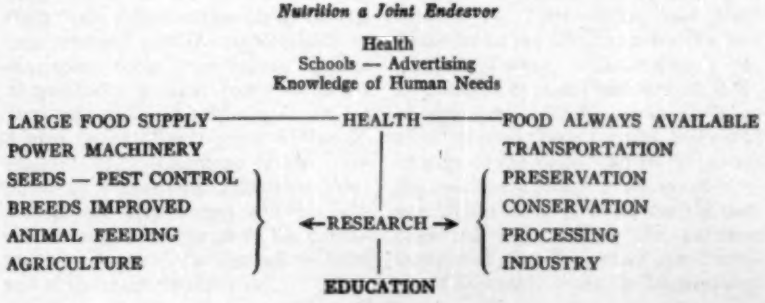
to prevent as small an abnormality as carious teeth. Why then act as though we had the last word on the health of the entire body?

Students should learn how to supply adequate food on small incomes. Children enjoy figuring cost in comparison to food content and making graphs showing the difference. For example, one-quarter of the daily protein requirement supplied by meat costs 25 cents, or four cents if supplied by dried skim milk (non-fat dried milk solids), or if they are interested in calcium, one cup of milk for five cents supplies as much calcium as one-half pound of cottage cheese for 14 cents.

Children should acquire interest in land economy, realize that whole grains or properly enriched grain products are essential when people get little milk and meat, and that far more grain and legumes can be produced on land than milk or meat protein. They should know that in America we have three and a half acres of crop farm land for each person, in the Orient, one-quarter to one-half an acre. Such facts will make them respect the wisdom of highly populated countries which grow rice, soybeans, and supplement their diets with fish.

In nutrition, students can get an appreciation not only of our good fortune in our broad lands but of scientific farming, transportation, refrigeration, processing, marketing, pure food laws, and public health measures that have improved health. Here they can acquire respect for agriculture, land contouring, fertilization, better seeds, breed increased yield, and reduction of plant diseases and pests, power equipment, food preservation, and a transportation system have given us the needed materials. They must see that lack of equipment, overpopulation, and lack of education with emphasis on the past and traditional methods lead to catastrophe. They must see that brains must constantly be used to capacity to avert tragedy; that insatiable curiosity, prompt application of knowledge, gumption, and a sense of mission are the hope of the world. They must realize that mere knowledge about food values counts for little unless farmers produce, industries preserve, and facilities distribute the right food. They must realize that not only decent wages but wise budgeting is essential, that farm production and provision of the right food are of little value unless people have wisdom enough to select, cook, and eat properly.

Students well taught will see that if America is to fulfil her destiny, it will not be with bombs and jet planes, but through helping other peoples to solve their nutritional problems. People around and behind the Iron Curtain must know the America of the public health worker, of the county agents, and



of our functioning schools. These peoples must be helped to improve their food production, to select the right combinations for health and take responsibility for themselves.

The health of American youth will be as much improved through acquiring a sense of mission, a vision of a constructive way to use his energies as he has been helped through nutrition.

In summary, students well taught will realize that poor nutrition in this country results from lack of parental understanding, personal foibles acquired early in youth but grimly held, from false standards, from poor use of money and lack of functional down-to-earth education. They will see that undernourished bodies are tied up with self-centered, pessimistic minds and that hungry people are not interested in abstract ideals like democracy.

They will realize that nutritional knowledge here in America gives us a sense of mastery over life, helps balance the budget, reduces medical cost, maintains the right architectural proportions for social success and long life, improves the sense of humor, promotes efficiency in school and business, and makes us better able to take it. Nutrition well taught will make people glory in the American way of life, its agriculture, industries, education, its research, its public-health-mindedness, its pure food law, and its humanitarianism.

In a word the goal of nutrition in school and society is that each may fulfil his destiny and become an instrument for forging a better world.

Walter Reed Society Organized

The Walter Reed Society is made up of persons who have served as "human guinea pigs" in medical research or experimentation under the direction of a qualified scientist. Sponsored by the National Society for Medical Research, the new organization held its first meeting in Los Angeles in December at the close of the American Medical Association's clinical session. Max Sadove, M.D., head of the Department of Anesthesiology at the University of Illinois, is organizing president; secretary-treasurer is Betty Jenney, research associate at the same university, to whom queries should be addressed.

The Professional Examination Service

A Tenth Birthday and a New Name

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THE Merit System Service of the American Public Health Association is celebrating its tenth year of service in the field of testing and, with it, has acquired a new name. It is now known as the Professional Examination Service, a more descriptive, inclusive, and appropriate title in view of the increasing requests for testing materials from professional groups not related to merit system and civil service agencies.

What has happened in this fast-moving decade of testing experience? Primarily growth, which has been the result of nation-wide interest, the coöperative efforts of hundreds of professional workers and the support, both moral and financial, of national, state, and local agencies concerned with personnel selection. Writing in March, 1941, in the *American Journal of Public Health*, Dr. Atwater pointed out in editorial comments: "The extension of Civil Service benefits to public health workers . . . is in the process of becoming a reality. This is greatly to be desired. . . . we hope every reader of the *Journal* will give them" (the Subcommittee on Merit Systems, charged with the responsibility of developing tests) "the fullest measure of assistance in their endeavor to get facts and shape conclusions." In his annual report of that year, William P. Shepard, M.D., Chairman of the Committee on Professional Education, said: "Those who have contact with this Subcommittee are convinced of the magnitude and complexity of the task on hand and of its future possibilities."

Of the "complexity" of the task of developing testing materials for the selection of public health personnel in civil service agencies there could be no doubt. The requirements imposed by the merit system regulations were new to hundreds of public health agencies in 1941. The field of scientific testing was unfamiliar to public health officials, and objective tests had rarely been encountered. The project started with an inexperienced staff. Advisers and consultants had to be sought and then "sold" the idea of using written objective tests as selective devices. Professional guidance from test technicians had to be secured to direct the whole procedure of constructing tests. It was all an unexpectedly expensive process. During the first two years, four different psychometricians gave direction—sometimes not the *same* direction—to the project. The difficulties of those early days could not have been met had it not been for the help and firm faith of those who were "convinced of the future possibilities" of the task. Foremost among these were Martha M. Eliot, M.D., and Ruth Blakeslee of the Children's Bureau, and Thomas Parran, M.D., Joseph W. Mountin, M.D., and Pearl McIver, R.N., of the Public Health Service. They aided by giving time, thought, and moral support to the plans, and set in motion the machinery which made possible financial aid from the states for the purchase of tests. With the unfailing interest of the Committee on Professional Education under the leadership of

Dr. Shepard and later Dr. Burney, with the help of the members of the Merit System Committee itself, and with the coöperation of the American Public Health Association and *Journal* staffs, the hazards of infancy were passed. The coming of Lillian D. Long, Ph.D., as Psychometrician, and later Director, stabilized policies and since then progress has been healthy and sound.

The most striking outward change from "Merit System" to Professional Examination Service is physical. The visitor who came to the one-room office in 1942 would be duly impressed in 1952 by the 2,500 square feet of well equipped office space. He will find private offices and a consultation room for a full-time staff grown from 2 to 21, with 21 part-time consultants. The 1,500 questions in the files of that first year now number more than 45,000 and relate to the general fields of:

Basic Sciences
Biostatistics
Dentistry
Environmental Sanitation
Health Education
Hospital Administration
Industrial Hygiene
Medicine
Nursing
Nutrition and Dietetics
Occupational Therapy
Pharmacy
Physical Therapy
Psychiatry
Psychology
Public Health Laboratory Work
Sanitary Engineering
Social Work
Veterinary Medicine

There are, of course, many breakdowns within these general fields, as for instance, Public Health Nursing under Nursing.

From the beginning, the Professional Examination Service drew its strength from those who actually participated as qualified helpers in the step-by-step development of test questions. From the writing of the first examination question to the one being filed as you read this paragraph, literally thousands of persons have helped to shape the destinies of the program. Item writers, reviewers, consultants, volunteers in pretesting, students, and business advisers, representing the whole country and all levels of authority, have participated in planning. Federal, state, county and municipal public officials, university faculties, specialty board members, voluntary agency personnel and civil service directors have contributed assistance through their interest and through use of the tests. The most pertinent help came and still comes from the hundreds of candidates who take the tests for appointment to positions. They share their general impressions of the experience and make practical suggestions for the improvement of the service and the tests. If "Civil Service administration can rise no higher than its source, which is the competitive test,"* then there must indeed be a reflection of the quality of our tests in improved administration in many parts of the country, for these tests represent the best professional thought and effort.

Vital to the security and growth of a new project is its financial support. As rapidly as possible it has been the aim of the Professional Examination Service to become self-supporting. Underwritten by the American Public Health Association, assisted by federal funds and by generous appropriations from the National Foundation for Infantile Paralysis, Inc., the first years of the project were years of rapid expansion and of expediencies quickly outgrown. Probably adequate financing will always be a problem. The construction of discriminating questions, well balanced and appropriate examinations and the necessary statistical analyses of test results are expensive processes and, unlike other

* Merit System Advancing. Fifty-fourth annual report, Municipal Civil Service Commission, City of New York, 1937. p. 19.

fields of production where a very large market for a uniform product reduces the cost to the consumer, public health examinations have a limited market and must of necessity be highly individualized. The Professional Examination Service is nonprofit-making. It must cover costs without compromise on quality. It hopes to continue solvent through the development of new fields of service, as well as through the installation of mechanical devices and streamlined office procedures to conserve professional and clerical time.

At the beginning of the program, examinations were tailor-made to fit the specifications of each position for which a state ordered an examination. As experience accumulated with the years and as confidence in the method and material increased, it became evident that the interests of good testing practice would be best served by preparing standard tests for the positions that were most similar from one health department to another.

The acceptance of standard tests by the states has had far-reaching effects. It has meant that tests can constantly be improved and sharpened, since their use by a number of agencies provides sufficient data to justify statistical analysis. It has meant that states can compare the scores of their relatively few candidates with national norms established on a far larger group of candidates—a valuable yardstick that was hitherto unavailable. The efforts of the staff, released from the unfruitful procedure of developing basically similar tests over and over again, were turned to the preparation of a wider variety of tests in a larger number of public health fields. Because copies of available tests are always "on the shelf," orders from states can be filled in a fraction of the time that was formerly needed.

It should be stressed, however, that standard tests have in no sense resulted in a routine matching of tests and specifications. The subject-matter consultants assign tests only after careful review of the specifications. It is frequently necessary to revise or supplement one of the available standard tests. It is quite often necessary to develop an entirely new test; but these revised and new tests can then be added to the library of tests and increase the resources available to all agencies.

Most of the merit system agencies using the tests do so as subscribers to the Annual Service Plan. Under this Plan, an agency may obtain as many copies of any available test as it needs during the contract period of one year. At present, 31 states and eight local jurisdictions are in the Plan. Last year over 600 orders for examinations were placed. A scoring and statistical service are included in the contract along with field consultation in personnel practices.

However, by far the most significant evolution in these years has been the change in the point of view and attitude toward the idea of using written objective tests as a selective device for professional workers. During the first two or three years, reactions of this sort were frequently heard: Why does a state-licensed practitioner have to take another test in order to get a job? Why does an incumbent of several years standing in an agency have to take a competitive examination of *any* sort? Why is not my diploma from a recognized professional school sufficient evidence of my abilities? Why do not my years of experience prove that I am qualified for this position? As an older worker, will I be asked questions for which I cannot possibly be prepared? Sometimes it was hard to convince administrators that an effective selective device would save money, wear and tear, and reduce turnover. It was only gradually that they came to realize the tangible as well as the intangible values in the testing service, of which the greatest is probably a satisfied candi-

date who feels that the test has been fair, pertinent to his field, and free from prejudicial factors.

Gradually, the nature and quality of the tests have become familiar. The form of question, once used, is simple to handle. The need for ranking a group of candidates, all presenting acceptable and often very similar qualifications for a given position, has been realized. In short, a written test has become a familiar experience. Resistance was further lowered by providing opportunities to prospective candidates to familiarize themselves with the new testing methods. One device was a sample test given to visitors and scored at the American Public Health Association booth at annual meetings—a painless, even amusing, way of group education. Another was using tests with student groups. Still another was the inauguration of a field consultation service which was probably the single most effective method of explaining and interpreting the examination program. Candidates now take a written test in their stride and it has been many months since a jittery letter has been received from a prospective candidate. To paraphrase the advertisers: "From experience has come faith."

As a result of this confidence, the use of the Service has been expanding among groups other than the merit system agencies. Professional bodies of many types, such as students, staffs of private agencies, specialty and licensing boards, are using the Service. Currently available are special examinations for the following purposes:

Staff selection

Staff inservice training, guidance, and promotion

Student selection and guidance

Licensure and certification, as for example, by the American Board of Preventive Medicine and Public Health, Inc.

Selection and promotion of commissioned officers in the U. S. Public Health Service

These are important and gratifying evidence of the usefulness of the testing service and it is hoped that many more uses for it will develop in the coming years.

Naturally, there are still some blocks to progress. One of these, already mentioned, is financial. Another lies in the lack of understanding among many administrators of how to interpret and use the scores obtained in the tests. Sometimes too much is expected of a test of this kind. It will not measure personality, for example, although it will, if properly constructed, measure judgment and reasoning ability. The establishment of the passing mark—so frequently set by civil service regulations at 70 per cent—is another confusing issue which the test technicians of the Professional Examination Service are continually asked to interpret. However, these problems of using and interpreting tests and test scores are a matter of understanding and experience. As the consultants in each professional field and the psychometricians work together, the differences in approach become clearer, mutual understanding of the characteristics and basic concepts of each field develops, and a workable technique in test construction evolves. It can be truly said that the testing service is a happy example of group thinking and group action.

With this broad foundation of experience, with a wealth of materials at hand, and with the generous professional acceptance of its services, the Professional Examination Service looks confidently ahead to fields of even greater usefulness during its second decade. Everyone knows the first 10 years are the hardest!

Vol. 42

American Journal of Public Health
and THE NATION'S HEALTH

Official Monthly Publication of the American Public Health Association, Inc.

Volume 42 March, 1952 Number 3

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THE VOICE OF AMERICA

WE are glad to publish in this issue of the JOURNAL three brief papers from the San Francisco meeting on the subject of biological warfare. They are of value from the purely technical standpoint; and they are of even more significance in the underlying spirit of their approach. They do not minimize the real dangers which exist; but they are animated by a calm confidence that those dangers can be met.

This attitude is characteristic of the really competent experts in the many other fields of national and international tension. Our military authorities, our business leaders, our State Department, realize fully the gravity of the problems which must be solved in building a better world; but they do not doubt that if we keep our chins up those problems can be solved.

What is disturbing is the widely different attitude of many members of the Congress, of a majority of our radio commentators (with such distinguished exceptions as Edward R. Murrow and Elmer Davis) and of perhaps an even larger proportion of our newspaper columnists. Like the boy in Dickens they "Love to make your flesh creep." They snatch at every obstacle in the path and magnify it from a molehill to a mountain. They ignore the astonishing progress which has been made in the improvement of our national power and in the strengthening of the bonds of creative international unity. They appeal consistently to the evil motives of hate and fear. They render direct service to the forces of chaos, against which we strive, by undermining confidence in our responsible leaders.

The motives which animate these exponents of destruction, rather than of creation, are various. Some are unscrupulous politicians ready to work any damage to national unity for the sake of partisan advantage. Some are merely sensationalists, seeking to attract attention by screaming more loudly than their

neighbors. Some show clear evidence of the fundamental emotional maladjustments which create an overwhelming desire to work injury on others.

Comparing their attitudes with those of the responsible leaders who are striving earnestly to solve the world's problems reminds us of a remark made after the close of the first World War. It was said, "In Berlin, they say 'The situation is serious but not desperate.' In Vienna, they say 'It is desperate but not serious.'"

The shrieking brotherhood does not, however, represent the voice of America. Since the days of the pioneer settlers of the seventeenth century, the real American has recognized that this is a tough old world; but has been confident at bottom that it was in the power of mankind to remake that world; and that it was our mission to do the job. To European friends who may be dismayed by the seemingly discordant voices raised in this country, we commend the penetrating phrase of Rudyard Kipling who said of the typical American:

> Illogical, elate,
> He greets the embarrassed Gods, nor fears
> To shake the iron hand of Fate
> Or match with Destiny for beers.

CLEAR THINKING ON MULTIPLE SCREENING

WITHIN the past two years, multiple screening has achieved a prominent but controversial place in public health work. The idea grew out of a desire to combine several procedures used in mass case finding so as to achieve economy of effort and cost, and to provide more efficient service both to the persons screened and the community as a whole. Since its emergence, multiple screening has unquestionably captured the imagination of workers in public health, as well as of the general public.

Nevertheless, any consideration of multiple screening at this time must start from the basic premise that this procedure is still in a frankly experimental stage.[1, 2] The introduction of multiple screening has raised many questions to which we do not yet know the answers. We have still to discover what are the fullest potentialities of multiple screening, to establish its limitations, to develop methods for appraisal and evaluation of its results, and to determine the circumstances under which its use will be most beneficial to the individual and the community. At this stage of analysis and experiment, therefore, it is imperative that all responsible persons involved in public health work should think through very carefully all the implications of multiple screening.

Levin has defined screening as "the application of presumptive tests to determine whether there is a need for the application of more definitive diagnostic procedure,"[3] and has pointed out that screening may be used in clinical diagnosis, in clinical detection, or in nonclinical detection. Clearly, screening, whether single or multiple, is a tool, and as such any judgment on its value would seem to depend on the purpose for which it is employed, and the degree to which it achieves this aim. To argue as Smillie does,[4] that multiple screening should be rejected out of hand because it is "low-grade, short-cut medicine," is scarcely justified.

A more judicious view of multiple screening may be obtained by considering it in terms of the basic purposes for which it is employed, within the larger framework of the medical care problem in the United States. All multiple screening programs conducted so far have had one of two major aims; either to raise the level of preventive medical service in the community, or for mass case finding. If it can be shown that the apparently well population benefits from the achievement of these aims, then the objections offered in opposition to multiple screening can hardly be regarded as valid. On the basis of the available evidence it would seem that these objectives can be achieved. According to Scheele, for example, in two instances multiple screening programs were later established as "regular health services . . . conducted in permanent clinical facilities."[2] Furthermore, while some screening devices still require improvement in terms of specificity and sensitivity, there is little doubt that multiple screening for mass case finding is an effective tool.

Furthermore, while we could probably all agree that the best way to detect disease in its earliest stages is for the doctor to practise detection in his own office, the fact remains that this is an ideal difficult to achieve under present conditions. At the recent National Conference on Preventive Aspects of Chronic Diseases held in Chicago, March 12–14, 1951, recognition of this fact led to the recommendation that mass screening tests be made available to physicians as a service to which they may refer their patients. It must be recognized that many people have no conception of preventive medicine. They must be shown what preventive medical care means and be guided to accept it. In other words, the screening process, if properly used, can be made to serve an educational function. Thus, the creation of screening and detection facilities must be seen in a broader perspective than that postulated by Smillie. It is not just a matter of whether the person to be screened is first seen by the doctor and then examined, or is first examined and then seen by the doctor. In fact, the multiple screening facility can serve a dual function. On the one hand, it can serve as a laboratory facility to which the doctor can refer patients for screening, on the other as an agency to screen persons who have not sought medical attention, and to refer them, when indicated, to a physician for diagnosis and care. Such screening facilities need not be limited to health departments. As Rosen recently proposed at the San Francisco meeting of the Association, this would be a suitable undertaking for voluntary medical care prepayment plans.

One thing is certain. There is need for continuing study and evaluation of effective diagnostic techniques capable of application at a low cost to large numbers of people. If the purpose of medical care is the maintenance of health and the prevention of disease, it would seem reasonable to explore every procedure and technique which is known to provide reasonably reliable evidence of health or disease. One may properly raise questions concerning the effectiveness of techniques, but there is no justification for categorical rejection of any approach to the provision of preventive medical care before all the evidence is in.

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2. Scheele, L. A. Current Experience in Multiphasic Health Examinations. *A.J.P.H.* 41, 6:635–639 (June), 1951.
3. Levin, M. L. Detection of Chronic Disease. *J.A.M.A.* 146:1397–1401 (Aug. 11), 1951.
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A DECADE OF PENICILLIN

IT is now approximately ten years since the first of the antibiotics was made available for clinical use in the United States; and the development of this new type of therapy forms one of the most dramatic chapters in the history of public health.

If the mind of man were more imaginatively open to the significance of newly observed phenomena, we might have had this great discovery half a century ago. In 1881 the English physicist John Tyndall clearly described the effects involved. In his early studies of the microbic flora of the atmosphere[1] he noted that when organic infusions were exposed to the air, rapid development of bacteria took place *except* when a growth of mold occurred on the surface. In the latter case he observed, "The mold stifles the Bacteria and clears the liquid all the way between the sediment and the scum." Furthermore, he noted that only those "Bacteria which manufacture a green pigment appear to be uniformly victorious in their fight with the *Penicillium*"—recognition of the failure of the mold to control certain Gram-negative bacteria. No one, however, saw the significance of this observation until Alexander Fleming observed a similar phenomenon in 1929; and it was 1940 before Chain and his associates actually developed penicillin for clinical use.

The first—and one of the most important—of the drugs which will destroy invading germs within the human body was, of course, quinine, introduced in the seventeenth century into Europe from Peru where its effectiveness had been empirically discovered, presumably by the aborigines. At the end of the nineteenth century the acceptance of the germ theory of disease and the development of organic chemistry led to an eager search for a *"therapia sterilisans magna,"* and in 1907 Ehrlich and his pupils introduced salvarsan. The sulfonamides were developed in 1932; and now the antibiotics have come into their own—with possibilities far greater than those of any of their predecessors.

Penicillin has proved of notable value in combating the bacterial pneumonias and the commonest types of streptococcal infection, so that while we have done little in controlling morbidity from upper respiratory infections, the mortality from pneumonia has decreased to a most encouraging degree. Gonorrhea, too, is now for the first time really susceptible to therapeutic control.

Meanwhile, other antibiotics, such as aureomycin and terramycin have proved effective in diseases due to the Gram-negative bacteria which Tyndall had found to be resistant to the influence of *Penicillium*.

Above all, however, the antibiotics have brought about a veritable revolution in the campaign against diseases caused by the treponemas. Salvarsan was reasonably effective, but to prevent relapses long-continued treatment (often extending over a year or more) was necessary for complete cure. Penicillin has completely changed the picture.

In many areas of the world, the incidence of syphilis is far higher than that ever recorded in Western Europe or in the United States. In the Straits Settlements the rate was reported, in 1937, to be 494 per 100,000, 30 times the rate of England and Wales, 47 times that of Holland, and 75 times that of Sweden. In North China, 10 per cent of persons offering to serve as blood donors were found to be syphilitic. In Northern Rhodesia it has been estimated that 100,000 man-days of labor are lost each year as a result of venereal disease.

In the United States and Western Europe, we think of syphilis as a venereal infection. In many countries, however, infection with the germ of syphilis *(Treponema pallidum)* is widespread among children, transmitted through nonsexual personal contact, eating utensils, and perhaps by insects. This form of the disease is called "bejel" in the Middle East and "njovera" in Rhodesia. In Iraq, a million people are believed to be affected by bejel.

Furthermore, there are two other widespread diseases, disseminated in this same way by nonsexual contact, largely among children, which are caused by species of treponemas distinct from *T. pallidum*. These are "pinta" which is endemic in many parts of Central America (caused by *Treponema carateum*); and "yaws" which is widespread and prevalent in South America, Africa, the Far East, and in the Western Pacific area (caused by *Treponema pertenue*). Guthe and Reynolds[2] believe that the total burden of nonvenereal treponematoses is fully equal to that imposed by venereal syphilis.

Serological studies show the close relationship between diseases caused by all three treponemas; and all three are highly susceptible to treatment with penicillin. This was demonstrated for syphilis by J. F. Mahoney in 1943, by G. M. Findlay for yaws in 1944, and by F. Akrawi for bejel in 1949. The results of mass treatment programs carried out in many countries have been phenomenal. In a demonstration carried out on endemic syphilis in a village in Yugoslavia, every single case of infection was discovered and treated. After a 10 month period not a single new case had occurred. In Haiti, where yaws is widely prevalent among the rural population, from 35,000 to 50,000 persons have been treated monthly in a campaign sponsored by the World Health Organization and the United Nations International Children's Emergency Fund. It has been estimated that by this single program 100,000 incapacitated persons have been returned to work, increasing the national production by five million dollars' worth a year.

Is there a stranger chapter than this in the whole history of scientific progress? Ten years ago, mold was a faintly repulsive fungoid growth which sometimes caused the spoilage of food products. The very word "moldy" implied something "musty, fusty, and stale." Today, the blue mold is recognized as a synthetic chemist of the first order—a friend and benefactor of the human race.

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Clearing House on Public Health Salary Information and Personnel Needs

NURSE RECRUITMENT NEWS

The Committee on Careers in Nursing of the five (soon to be two) national nursing organizations late in 1951 held a number of Regional Student Nurse Recruitment Institutes as a new type of nurse recruitment program. The purpose of the institutes was to provide an opportunity for interchange of information and ideas, to help create and strengthen state and local recruitment committees, and to help coördinate the efforts of each with the other and with the national committee.

Each of the institutes—held in Denver, Detroit, and Philadelphia—opened with a dinner meeting at which the scene was set for the all-day meeting to follow. Hospital administrators, nursing school staffs, state and local recruitment chairmen, school counselors, representatives of medical societies and women's auxiliaries and of service clubs, and student nurses among others took part in the discussions. These were centered around such topics as "What Can Be Done To Recruit More Student Nurses?" "The Nurse In Defense," "Why I Chose Nursing." Other institutes may be held in 1952.

At present it is planned that the experience and information coming out of the institutes will be brought together in the form of a recruitment manual available to recruitment groups.

At the year's end the Committee also reported that 41,667 new students had been admitted in 1951 to the 1,170 schools of nursing throughout the country, a drop of nearly 6 per cent from the 1950 figures. However, the U. S. Office of Education estimates that 9 per cent fewer freshmen were admitted to the nation's colleges and universities. Still another estimate indicates a 4 per cent drop in the number of college freshmen women and a 10 per cent drop in the number of women entering teachers' colleges. Competition of industry, the armed forces, and other professions for high school graduates in the top half or third of their class is considered the chief cause for the drop in admissions to nurse training schools.

The Committee is distributing a revision of the "Opportunities for Nursing" chart, which lists the various types of nursing opportunities with salary ranges. One explanatory sentence is significant: "The largest number of salaries lie between the minimum and average, while maximum salaries quoted are relatively few in number." The chart is 3 cents a copy, $1.50 per 100. Committee on Careers in Nursing, 2 Park Ave., New York 16.

JOB ANALYSIS IN THE HOSPITAL FIELD

The American Hospital Association and the U. S. Employment Service have coöperated in putting into a single manual the first complete description of all jobs, duties, relationships, and departments in the hospital. Entitled *Job Descriptions and Organizational Analysis of the Hospital and Related Health Fields*, it describes 185 hospital jobs and 22 hospital departments. Intended also as a recruitment document, it is available to vocational counselors, high schools, and colleges from the U. S. Government Printing Office, Washington, D. C.

A RECREATION RECRUITMENT PIECE

Recreation: A New Profession in a Changing World is an attractive recruit-

ment leaflet published and distributed by the National Recreation Association (315 Fourth Ave., New York 10). Its springboard applies equally well to recruitment of public health workers—the importance of recreation to the mobilization and more effective utilization of our national resources, human and physical, in order to change the world for the better. The leaflet is designed primarily for high school and college students and their vocational counselors, since a college degree is a basic requirement for most recreation positions.

HOSPITAL EMPLOYEE SALARIES INCREASE

The Hospital Salary Survey of 1951 indicates that starting salaries for hospital employees have increased 38 per cent since 1945; for general duty nurses, starting salaries have increased 45 per cent. Higher salaries were accompanied by an increasingly shorter workweek, a trend toward cash payments, and a growth in pension plans. Pension plans were in operation in 69 per cent of the hospitals reporting. Also, most of the hospitals reported participation in the federal social security program for which nonprofit hospitals became eligible at the beginning of 1951.

The 1951 study is the 7th annual salary study made by the American Hospital Association. It has been distributed to the member hospitals of the Association. American Hospital Association, 18 E. Division St., Chicago 10.

PREMATURE CARE TRAINING ON WHEELS

Duke University, which opened the first training center for premature infant care in North Carolina in the fall of 1951, has now added a mobile institute which is being held for two day periods in various cities of the state. The first were held January 15–16 in Wilmington, and January 29–30 in Charlotte. Again, in the spring between the more intensive courses at Duke, institutes will be held at Asheville and Elizabeth City.

This program is sponsored by the North Carolina Pediatric Society and administered by the State Health Department, which pays nurses' tuition and maintenance during this training period.

RISING PRICES—RISING TAXES

What raises in salary or income are needed to keep buying power up to prewar and pre-Korean levels is discussed in two recent issues of *U. S. News & World Report* (Nov. 9 and Nov. 16, 1951). A series of dramatic charts indicate that the greater the raise in salary, the faster the rise in taxes. The $4,000 a year married man with two children in 1939 now needs $9,017 to live as well as he did in 1939; the $10,000 man of 1939 needs $25,224 currently.

Under current tax laws, the $5,000 man who gets a $500 raise keeps $377, while the rest of the raise goes for taxes; the $10,000 man with a $1,000 raise keeps $710.

As to the post-Korean situation, the married man with two dependents whose weekly pre-Korean salary was $200 now needs $233.50, nearly one-third of the increase to cover the tax rise, the remainder the cost of living rise. The $100 pre-Korean man now needs $3.52 for increased taxation and $11.35 for living-cost rises.

Inherent in the discussion is the well known fact that the man on a fixed salary or income is at the greatest disadvantage with respect to rises in taxes and living costs.

U. S. News & World Report is published in Washington, D. C., U. S. News Bldg., 24th and N Sts., N.W. Subscription $5 a year.

Credit Lines

TODAY SOMETHING CAN BE DONE

"Now aren't you the lucky one!" is the opening sentence of "Junior Has a Hearing Loss" by Rose Feilbach. Thus the hearing conservation specialist of the Arlington County Schools, Virginia, dramatically announces to parents that today there are facilities nearly everywhere within easy reach for getting an accurate diagnosis of hearing loss first and then training to compensate for the loss. Many of these helps did not exist a quarter of a century ago. The article includes some of the signs which may indicate a hearing difficulty. Reprinted from *Hearing News*, the official publication of the American Hearing Society which distributes it. 8171 4th St., N.W., Washington 5, D. C.

The Society also sponsors National Hearing Week. The 1952 week is May 4–10.

YOU AND A COUNTY HEALTH DEPARTMENT

What Does a County Health Department Mean to You?, by the Illinois Department of Public Health, tells in a few sentences and with appropriate drawings what a health department can be expected to do. It starts with the parent and goes through a series ending with just ordinary Mr. and Mrs. Citizen. In between are physician, employer, worker, businessman, farmer, welfare worker, taxpayer, among others. It ends by telling what a health department is, how it is financed in Illinois, and how to vote in the referendum which usually decides whether a county is to have a health department. This pamphlet has some good suggestions for others faced with the same problem of public education. Illinois Department of Public Health, Springfield.

LABELS CAN GUARD YOUR FAMILY'S HEALTH

The Food and Drug Administration, as an aid in protecting both the consumer's health and his pocketbook, has published the booklet whose title demands, *Read the Label on Foods, Drugs, Devices, and Cosmetics.* The 40 page publication tells in simple words, with cartoon style illustrations, what to look for on labels and what information federal laws require that they contain. "Labels can help you get your money's worth and guard your family's health," says Charles W. Crawford, Commissioner of Food and Drugs. Govt. Ptg. Office, Washington, D. C., 15¢

NUTRITION BEFORE AND AFTER

A series of five new or revised nutrition pamphlets, particularly for the pregnant woman, have been prepared by the National Dairy Council. They are *Stork Sense, How To Take Care of Yourself—Before the Baby Comes, After the Baby Comes, How and What To Feed Your Baby*, and *Every Day Care and Food for Dental Health.* Naturally they each stress the virtues of milk as a food for the pregnant woman and for the infant but they by no means neglect the well rounded diet. Attractively printed and illustrated and free from National Dairy Council, Chicago 6.

NEW PUBLIC AFFAIRS PAMPHLETS

The two latest Public Affairs pamphlets are *Something Can Be Done About Chronic Illness* by Herbert Yahraes and *Why Some Women Stay Single* by Elizabeth Ogg.

The former was prepared in coöperation with the Commission on Chronic Illness and the U. S. Public Health Serv-

ice and "gives a rounded picture of the problems of prevention, treatment, and care that are common to most chronic diseases." It stresses the coöperative aspects of care for the chronically ill and details fully where the citizen can get information.

The pamphlet on single women and their problems says little that is new and much that is conventional. It emphasizes happiness rather than the full measure of both joy and sorrow.

Another pamphlet expected off the press in early spring is *Your Neighbor's Health Is Your Business*, by Albert Q. Maisel, and prepared in coöperation with the National Health Council. It's all about how citizens get or improve their community health services.

TELLING YOUR STORY TO YOUR PUBLIC

Tompkins County is one of the 13 New York counties, outside of New York City, that have county health departments. Its recent booklet, *Tompkins County Health Department Services*, is a series of photographs, with a minimum of text, that tell the number and variety of services the Department offers. The pamphlet might well be used also in persuading citizens without a health department what they are missing. William C. Spring, M.D., is the health officer; headquarters are at 105 E. Seneca St., Ithaca.

THE WHY OF THE RULES

The Columbus (Ohio) Health Department is carrying on a pilot study to find out whether an intensive educational program can improve garbage and rubbish collection. In a selected area of different types of housing and business and various family income levels, health department inspectors are visiting every family. Families are told about the special problems of garbage collectors and how they can simplify the problems, save tax money, and have better health conditions for their neighborhood. The difference between garbage and rubbish, how each should be presented and why are explained. A leaflet, *How You Can Be of Help in Garbage and Refuse Collection*, is left with each family. The Health Department's interest, though it does not collect the garbage, is explained in terms of the health menace created by rats and insect pests through improper handling of garbage.

If this health education project is successful, it may be extended to the entire city. Ollie M. Goodloe, M.D., is health commissioner.

PINPOINTING THE DOCTOR SHORTAGE

If the situation in 20 rural counties of Missouri is typical either of the rest of the rural areas of the state or of rural areas of the United States generally, there is cause for alarm about the shortage of practising physicians. This is the conclusion of a study made in the Department of Rural Sociology of the University of Missouri. The study has been summarized and popularized in *The Missouri Farmer*, the monthly organ of the Missouri Farmer's Association. This monthly is distributed to about 123,000 members of the Association.

The survey finds that, on the basis of the 20 counties, 10 each in the northern and southern parts of the state, "far too few young practitioners have entered rural Missouri to replace those who die or retire."

In 1950 in these counties the number of persons per effective physician was 1,760, said to be twice as many as there were in 1921, and over 50 per cent more than in 1940.

In 1950, one out of every three practitioners in the county was past 65 years of age—a proportion that has nearly tripled in 20 years. One out of every five doctors received his medical degree before 1900. The average year of graduation from medical school was 40 years ago.

As to keeping up with professional

magazines, one-third of the total and more than half of those over 65 were not members of the American Medical Association.

The conclusion is that 90 new physicians will be required in the area in the next 10 years, or nearly three times the number who began to practise there in 1950.

The study represents an interesting example of taking a controversial issue out of the realm of generalities and relating it to specific places and populations. Here the people of Missouri are acting to study their own situation. They are not content with average country-wide figures.

The entire study may be obtained from the Department of Rural Sociology, University of Missouri, the popular article from *The Missouri Farmer*, each in Columbia.

A NEW TYPE OF ANNUAL REPORT

The Local Health Division of the North Carolina State Board of Health has developed an *Annual Public Health Report* for use by local health departments which neatly combines the best parts of the traditional activities report, the *Evaluation Schedule* of the A.P.H.A., and other reports of special fields. This is a significant advance in this difficult but important aspect of public health administration.

MANUAL OF SCHOOL HEALTH SERVICES

The State Board of Health and the State Department of Education have jointly issued *Health Services for the School-Age Child in Oregon*. This well written document was prepared by the Joint Staff (interagency) Committee as a manual for all those involved in school health services. The introduction states that: "The school assumes the responsibility of promoting good citizenship and should therefore teach the value of separate departments of health and education, each with its own responsibilities. . . . The health service program carried on for the school-age child is an integral part of the community health program." State Board of Health, Portland, or State Department of Education, Salem.

MOBILE HEALTH EDUCATION

"Health Education for Your Town" is the slogan of the Minnesota Health Department's pamphlet *Health Exhibits on Tour*. This describes the mobile health education exhibit which has been prepared by the Division of Heart Disease and Cancer Control. Eight displays are the nucleus of the exhibit—heart diseases, cancer control, dental health, home safety, mental health, civil defense, water pollution, and industrial health, with tuberculosis control and others to be added. The tour is set up for a month or more at a time to take in as many communities as possible and is accompanied by a member of the staff of the Division. But it is a community exhibit with local management and planning.

Also from the Department are two pamphlets illustrated in pastel shades, *It's Later Than You Think* on cancer, and *You Can Live Longer* on heart disease. As amusing and eyecatching as have been seen for some time.

AGREEMENT ON SEX EDUCATION

The New York State Health Department has recently published *The Gift of Life*. Designed as sex education material for the use of parents, this is, in the words of neighbor, annotating Raymond S. Patterson, "a beautiful piece of educational printed material."

Apart from its excellent production, the significant fact about the booklet is that it was prepared with the assistance and advice of a Religious Advisory Committee made up of clergymen representing the Protestant, Catholic, and Jewish faiths. It is being sent to all ministers, priests, and rabbis in the state, who are

invited to obtain copies for distribution to the parents in their congregations. Thus both in the preparation and distribution, the publication represents an example of close coöperation between a state agency and religious groups in dealing with a problem that has both health and religious aspects.

WISCONSIN PUBLIC HEALTH—75 YEARS

The Wisconsin State Board of Health completed its 75th year in 1951. Its health officer, Carl N. Neupert, M.D., took note of the fact in the Board's last 1951 bimonthly bulletin, *Health*. He divides the progress of the Board into four distinct phases as follows:

1876–1913 Quarantine and other regulations, promotion of local boards of health and health departments.

1913–1936 Real progress in combating communicable diseases. County nurses and state health districts authorized.

1936–1947 Beginning of federal grants-in-aid making possible broad expansion of state services to local districts. Eight new divisions of the Department created.

1947– Permissive county unit legislation officially inaugurated a change in emphasis from centralized administration of local public health toward the day when every county has its own health department. Today we have only one.

As a barometer of improving conditions, Dr. Neupert uses charts which show that between 1910 and 1950, when population of the state was increasing by nearly 50 per cent, there was a decrease of two-thirds in the number of infant deaths, of 93 per cent in infant deaths from dysentery, diarrhea, and enteritis, and of 88 per cent in deaths of mothers in childbirth.

"A MAN CONVINCED AGAINST HIS WILL"

The Bureau of Business Practice has issued a little pamphlet, *The Art of Persuasion*. It points out the right way to go about the tough job of getting a man to change his mind. What it has to say is not new, but it bears repetition, especially when the repetition is as pleasant and humorously illustrated as this little pamphlet. In the "Human Side Series" issued regularly by Bureau of Business Practice, New London, Conn.

PREVIEW OF HEALTH

"Good Health in 1952" is the annual calendar of the Department of Health, Virgin Islands. Each month is illustrated with a photograph of a department activity and a health slogan, "Improve your community through group study and action," for example. On the back are 11 parents' New Year's Resolutions, each emphasizing the child's mental hygiene. The calendar represents a good health education aid. John S. Moorhead, M.D., is Commissioner of Health.

WORTH ACQUIRING

"ASHA's Recent Publications" takes up a page and a half in the December, 1951, *Social Hygiene News* of the American Social Hygiene Association. It's a list worth having and ordering from—on sex education, case finding, family relations, special defense problems. Perhaps most intriguing is *Henry VIII and French Pocks*, described as the dramatic story of syphilis' influence on the course of English history. 1790 Broadway, New York 19.

Man to Man is a new leaflet published by the American Heart Association to quiet many of the unfounded fears about heart disease. Its message is that man can live—and often to a good old age—with his heart disease if only he will follow a few rules, the gist of which is, "moderation in all things." Written in colloquial language and with humorous illustrations, it is a good piece of health education material for widespread distribution. The Connecticut Heart Association developed the pamphlet. It is being distributed by local heart asso-

ciations, or single copies from American Heart Association, 1775 Broadway, New York 19.

"Pamphlets in Print on Rehabilitation" is a list of 451 pamphlets on rehabilitation currently available. Prepared by the National Society for Crippled Children and Adults, it includes primarily publications directly related to the handicapped, but also has many titles of general interest in the field of child education and development. Included also is a subject and a list with addresses of the 165 different publishers of the pamphlets. Single copies free. This bibliography is supplemented by a monthly *Bulletin on Current Literature* with an annual subscription price of $1. 11 South LaSalle St., Chicago 3.

Expediting Medical Progress, recently published by the National Society for Medical Research, illustrates in map form the legal status of animal research in the United States. The map shows which states authorize the use of unclaimed animals in scientific studies; which provide definite legal recognition of animal experimentation; and which have laws limiting biological research. Also indicated are the cities that provide for the use of unclaimed pound animals in scientific studies. The booklet outlines the barriers to medical progress that have been promulgated by various antimedical research groups, and describes the ways in which these barriers have been broken down through the program of the National Society for Medical Research.

Copies may be obtained from the Society's headquarters, 185 N. Wabash Ave., Chicago 1.

Infant Care—the newest edition of this 37 year old standby has just come off the press. It is the veritable bible for all mothers, particularly those with a first baby. It even has an appendix on "You and Your Baby Sitter." Prepared by the Children's Bureau and available from U. S. Gov. Ptg. Office, Washington 25, D. C., 20¢.

Your Defenses Against Cancer and *Stroke* have been reprinted from *Today's Health* of September, 1951. The former is the age-old plea for early detection of cancer. It is written to pull at the heartstrings in the hope of stirring to action. *Stroke* also emphasizes prevention, together with an explanation in uncomplicated language of what a "stroke" is. American Medical Association, 535 N. Dearborn St., Chicago 10. 20¢ and 15¢ respectively.

A Guide to the Problems of Narcotics was distributed to all school administrators and the more than 3,500 teachers in the District of Columbia school system in connection with an address on teen age drug and narcotic addiction to school administrators of the District by the district health officer. On the basis of the four page pamphlet, the Associated Press wrote a series of articles which were released to newspapers throughout the country. Within a short time requests for the pamphlet had been received from 32 states and a province of Canada.

Daniel L. Seckinger, M.D., Dr.P.H., is the District's health officer. The pamphlet was prepared by the Bureau of Health Education, from which it is available. Municipal Center Building, 300 Indiana Ave., N.W., Washington, D. C.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

General Medical Care Programs in Local Health Departments — *By Milton Terris and Nathan A. Kramer. New York: American Public Health Association,* 1951. 129 pp. Price, $.50.

This report to the Subcommittee on Medical Care, Committee on Administrative Practice of the American Public Health Association, prepared by two of its staff members, presents in small compass a comprehensive analysis of the ways in which provision of general medical services by local health departments is organized in the United States at the present time.

The field was surveyed by means of questionnaires addressed to every full-time local health department in the United States. Information obtained from the 50 per cent of completed questionnaires received was supplemented by a canvass of state health officers. Field visits were made to every unit responsible for the administration of general medical services, and the program descriptions in each case were submitted to the responsible administrator for review. Only programs directly administered by health departments were included in the report. In some of these there was responsibility for the operation of general hospitals, or the provision by private practitioners of preventive, diagnostic, and therapeutic services for the needy. Services rendered by health departments in connection with specialized programs were not interpreted as general medical care.

Programs of health departments rendering such service (5 per cent of all full-time local units, serving 10 per cent of the population covered by such units) are described in detail, allowing comparison according to the categories: Population Served, Origin and Development, Eligible Population, Services and Personnel, Volume of Services, Costs, and Administration. Where comparable units of measurement were not obtainable, information is given in the form peculiar to each program.

The activities of federal, state, and territorial agencies in the field of medical care are described briefly in relation to those of local health departments. In a summary chapter some general patterns are defined, and in four pages of discussion these are submitted to a restrained evaluation.

This report is valuable as an assessment of the amounts and patterns of supply of medical care services rendered by local health departments in the year 1950. Health officers of local health departments, administrators of medical care programs, and teachers of preventive medicine in medical schools will find it all the more valuable for having included a historical account of the development of each program. It is to be hoped that this survey will be repeated periodically. WILSON M. WING

Exhibit Techniques — *Edited by Helen Miles Davis. Washington, D. C.: Science Service,* 1951. 112 pp. Price, $2.00.

The material discussed is limited to the exhibits shown at the National Science Fair and the Science Talent Search. Nevertheless, the book is a most practical manual for exhibit-making, describing and analyzing more or less home-made exhibits by high school students. A good chapter deals with the eternal problem of "Criteria for Judging." Many of the described exhibits can be used in part for our newest media

of science education—television. Health educators, sanitary engineers, and workers in the laboratory field will find helpful suggestions. BRUNO GEBHARD

Global Epidemiology: A Geography of Disease and Sanitation. Vol. II. Africa and the Adjacent Islands—*By James Stevens Simmons, Tom F. Whayne, Gaylord W. Anderson, Harold Maclachlan Horack, and Ruth Alida Thomas. Philadelphia: Lippincott,* 1951. 652 pp. Price, $15.00.

Volume I of this series, by the first four authors of the present volume, was published in 1944 and dealt with India, the Far East, and the Pacific area. That volume was prepared from information accumulated by the Medical Intelligence Division of the Preventive Medicine Service of the Office of the Surgeon General of the U. S. Army during World War II. Its aim was to furnish information which would contribute to the successful prosecution of the war in the Far East through the protection of the health of military personnel and a knowledge of the health facilities and diseases occurring in that region. Its acknowledged inaccuracy and limitations were due to the pressure of time and the lack of much detailed information, but it was a very valuable contribution to geographical medicine and set a pattern for future publications on other regions of the world.

This second volume has been prepared by gathering information not only through reports from local and colonial government agencies and from social and medical literature, as well as correspondence and conferences with authorities on Africa, but also through personal visits by Miss Thomas to various colonial headquarters in Europe and to a number of the countries of Africa. The book is divided into eight sections dealing with forty-five countries, protectorates, and colonies. For each political unit the information is given under the following headings: Geography and Climate, Population and Socio-Economic Conditions, Environment and Sanitation, Health Services and Medical Facilities, and Diseases Spread by Direct or Indirect Contact and by Arthropods. Nutritional diseases and miscellaneous conditions are also presented, and each section is followed by an extensive bibliography.

This information provides an interesting and valuable picture of each political unit as to its natural resources and degree of development politically, socially, and in the provision of health and welfare facilities, as well as to handicaps caused by the burden of disease. Many of the data relating to vital statistics and the incidence of disease are necessarily incomplete because of the population groups involved and the lack of social organization, transportation, education, and adequate health and medical services. Nevertheless, it presents a contemporary picture of the African continent upon which future health and welfare activities can be based. Evidence that progress is being made and will be accelerated in the future is indicated by the fact that the World Health Organization and the governments concerned with Africa are uniting in plans for a concerted effort to raise the level of health and to promote the social and economic development of the continent.

The textual material is supplemented by local maps showing the distribution of individual diseases in each political unit and by maps of the continent showing the distribution of important endemic diseases. An appendix to the volume republishes a pamphlet entitled *Health Hints for the Tropics,* originally published as a 1948 supplement to *Tropical Medicine News* of the American Society of Tropical Medicine. An extensive index adds to the usefulness of the volume.

The authors and collaborators are to

be congratulated upon a noteworthy contribution to medical, public health, political, and social literature. The book should be in the hands of all individuals and agencies interested in the global study of disease and the development of international coöperation toward world improvement.

HENRY E. MELENEY

Handbook of Dangerous Materials—*By N. Irving Sax. New York: Reinhold,* 1951. 848 pp. Price, $15.00.

The primary purpose of the volume is to present descriptions of hazardous industrial materials. More than 5,000 chemicals are listed, alphabetically, together with their hazardous properties, methods for storage or handling, and requirements for protection of personnel. Chemical formulas and other physical characteristics, such as molecular weights, specific gravity, and boiling point, are given, so far as such information is available. Trade-named materials are listed and there is good cross-indexing. A rather limited bibliography is included. Explosives and fungicides are treated separately. Two rather incongruous portions of the book give a full discussion of fungus diseases, and radiation and radiation hazards. There is a good index. Fully one-quarter of the volume is given over to a printing of the complete text of the Interstate Commerce Commission Shipping Regulations.

The volume would have principal value among public health staffs as a source book for the industrial hygiene physician, nurse, or engineer who needs easy reference to condensed data on hazardous chemicals and to anyone who might have to ship any of these chemicals.

FRANCIS B. ELDER

Health in Schools—*American Association of School Administrators (rev.). Washington, D. C.: Department of the National Education Association of the United States,* 1951. 477 pp. Price, $4.00.

In 1942 the American Association of School Administrators published a yearbook entitled *Health in Schools.* It has since proved to be one of the most significant works in the field. Now it has been revised and is even better than before. The new edition is longer and includes two additional chapters. Furthermore, it is not just a simple revision, but rather a complete rewriting. The authors are nationally known school administrators, physicians, and health educators who represent the best thought on the subject. They have achieved an easily read, well organized volume that is up to date in every respect.

One of the new chapters deals with mental hygiene, particularly in regard to the development of improved programs in schools. The other new chapter is devoted to rather detailed discussions of many noncommunicable conditions which account for a large share of the health problems of children. These include dental caries, malnutrition, rheumatic fever, crippling defects, impaired vision and hearing, speech defects, and allergies.

Material appearing in the original yearbook under the heading of Health Guidance has been brought up to date and has been supplemented to include recent knowledge on health appraisal and counseling. One of the best cumulative health records ever devised is illustrated and discussed.

Problems involved in school health work that have become more pressing in the past decade are given increased attention. One whole chapter is focused on the problem of improving the working relationships between school and community health personnel, a development which is certain to result in better health of the school child.

Many school systems are confronted with the problem of whether or not to install ultraviolet radiation as a com-

municable disease control measure. Authoritative information is given on this as well as other control measures. School systems acquiring new school buildings or renovating old ones will find the chapter on the healthful school environment particularly helpful. Material included in the chapter devoted to the care of injuries and emergency illness is timely in the light of increasing civil defense efforts.

Almost a third of the book is devoted to health education. The authors suggest ways of solving such knotty problems as providing for health education in the secondary school, determining the health needs and interests of children, developing programs of health education for adults, providing the best educational opportunities for handicapped children, and getting the largest health education dividends from physical education and recreation.

Two other features of *Health in Schools* make it particularly valuable and timely. One is a chapter devoted entirely to the problem of discovering and making use of sources and resources in the field of school health. The other feature is two well written chapters on the health of school personnel and the health of the school administrator. Each chapter begins with a series of stimulating and provocative questions and ends with a list of carefully selected references.

This book is to be highly recommended for use by school administrators, teachers, nurses, physicians, and community health personnel.

JOSEPH K. HILL

The Prevention of Whooping-Cough by Vaccination. *A Medical Research Council Investigation. June 30, 1950. London: British Medical Association. Reprint from the British Medical Journal,* 10 pp.

This is a report of controlled trials made to assess the prophylactic value of pertussis vaccine in children. Altogether, 7,558 children between 6 and 8 months of age were divided into two groups distributed among five different areas for field trials. The authors believe the groups to be statistically similar. Five different batches of pertussis vaccine from three manufacturers were tested. Each child in both groups was visited at frequent intervals for a period of 2 to 3 years by a nurse investigator. Neither parents nor observers knew to which group each child had been allocated, since all received injections.

The attack rates per thousand child-months of observation were 1.45 among the vaccinated and 6.72 among the unvaccinated, giving a reduction of 78 per cent in the incidence of the disease. Among children exposed to pertussis in their own home, the attack rates were 18.2 of the vaccinated and 87.3 of the unvaccinated groups. The authors believe that the cases occurring in the vaccinated were on the average less severe and of shorter duration than those in the unvaccinated children. Each batch of vaccine gave substantial protection, but the two batches supplied by the Michigan Department of Health gave a considerably greater degree of protection than the others.

REGINALD M. ATWATER

Report of the Committee on Immunization and Therapeutic Procedures for Acute Infectious Diseases of the American Academy of Pediatrics—*Evanston, Ill.: American Academy of Pediatrics,* 1951. 69 pp. Price, 25 cents.

With this report in hand, as standing orders for the pediatrician and the family physician, there should be no conflict of purpose or plan of practice between those who care for the individuals in the preventive as well as the curative sense and the health officer who directs the program and campaign of community health protection.

There is in the 69 clear and well spaced pages of this report such agreement, such identity of facts, such uniformity of policy in matters of immunization procedures and management of the communicable diseases chiefly affecting children in the United States, as will be welcomed by all members of the American Public Health Association and a wide circle of other readers of the seventh edition of the A.P.H.A. report on *The Control of the Communicable Diseases in Man.*

With parallel purpose, prepared by highly qualified specialists of the same order of knowledge and responsibility as the members of the corresponding committee of the A.P.H.A., and dealing with details of individual and family application supplementary to those determining public administrative policies, this report from the American Academy of Pediatrics will bind still closer together the two professional associations for still greater effectiveness in lifesaving.

No physician to children and their parents need doubt, nor hesitate to follow in detail, the comprehensive recommendations for immunization and therapeutics here presented as safe and wise according to the latest information. Dr. John J. Miller, Jr., and his eight committee colleagues have done an admirable job and are to be heartily congratulated.

Medical officers of health are advised to familiarize themselves with this report and keep it conveniently near at hand for current reference and to help them in encouraging the best practice among the physicians of their respective communities.

The brief chapters on Precautions and Contraindications, Recommended Combined Immunizations Procedures, and on Separate Immunization Procedures and Tests are admirable in content and phrasing.

The 47 diseases separately dealt with from brucellosis to murine typhus are sufficient for all practical purposes in continental United States.

HAVEN EMERSON

The Inservice Training Course in Radiological Health—*Lectures presented February 5, 6, 7, and 8, 1951. Ann Arbor: School of Public Health, University of Michigan,* 1951. 139 pp. Price, $3.00.

The planning and conduct of this course and the production of the ensuing manual represent an important contribution to public health. As a rule, the members of the public health profession are uneasy and uncertain in their approach to the health problems of ionizing radiations. In the main the reason for this uncertainty is not the strangeness or the complexity of the technology of radiation protection, but rather the lack of a literature that is written in the language that the health worker and the industrial hygienist are trained to use.

The stated purpose of this course was: "that authorities be brought together who could sort out the basic material in atomic energy, refine it, put it together sequentially, and make it available to public health workers in understandable form." Through careful planning and effort based on its previous experiences, the University of Michigan achieved an unusually favorable combination of circumstances and did a pioneering educational job in this field. The university was assisted by the Atomic Energy Commission, the Public Health Service, other agencies, and by numerous individuals. Through coöperation of a publisher the editing and publication of the manual were unusually well done.

The manual contains the manuscripts from which the 21 lectures in the course were presented. The text has a connected story, starting at the beginning with an orientation section, which builds up from the fundamental physics involved in what radiation is, its sources,

the units of measurement and how it is detected, and on through various uses and applications to the concluding lecture, which deals with the public health aspects of civil defense against atomic weapons. As stated by another reviewer: "Through breadth of knowledge and capacity to express scientific facts in homely language, these masters in their respective fields have succeeded in presenting a sound, simply stated, understandable story of radiation."

In the continuous stream of published technical reports and general discussions on radiation hazards, this publication affords one of the best collections of authoritative opinions, specific information, and references that have been made available for the public health group.

ROY J. MORTON

Yellow Fever in Galveston—Republic of Texas, 1839—*By Ashbel Smith. A reprint, together with a biographical sketch by Chauncey D. Leake and a series of essays on "The Men Who Conquered Yellow Fever." Austin: University of Texas Press,* 1951. 129 pp. Price, $2.50.

Yellow Fever in Galveston presents the observations, clinical, pathological and epidemiological, made by Ashbel Smith, M.D., during an epidemic of the disease in 1839, when Galveston was scarcely two years old, Texas was a republic, and the author an "Ex-Surgeon General of the Texian Army." The observations reflect the studious interest of a well trained physician in the broad epidemiological aspects of the disease, as well as in the clinical course and treatment of those affected. Although he ascribed the local causes of the epidemic to the accepted miasmatic theory ("decomposition of abundant animal and vegetable matter . . . exhalations from the extensive adjacent marsh and quagmire"), he stated that the disease was not contagious but "is contracted only by exposure in the infected district," for he noted its absence outside the Strand; and that members of households outside the "infected area" did not contract the disease when an afflicted person was treated and nursed in their homes; neither had he contracted the disease, although he handled and "repeatedly tasted black vomit."

With the present-day diversification in the field of medicine, it is refreshing to read of a physician who found time in an active pioneer post to make contributions not only in the medical sphere, but also in the political and educational fields, which Dr. Ashbel did. We are indebted to Dr. Chauncey D. Leake, dean of the Medical School of the University of Texas, who has secured for us this interesting document. In the preface Dr. Leake gives a brief biographical sketch of Dr. Smith and as an appendix presents a series of articles edited by Josiah C. Trent, "The Men Who Conquered Yellow Fever." The volume has general historical interest in addition to its particular contribution to the study of yellow fever.

RICHARD G. HAHN

Pharmacopoea Internationalis—*(1st ed.). Vol. I. Geneva, Switzerland: World Health Organization,* 1951. 406 pp. Price, $5.00.

"This, the first, international pharmacopoeia is published by the World Health Organization in fulfilment of a long-expressed desire for the unification of pharmacopoeias. The various national pharmacopoeias, being produced independently to meet the needs of different countries, exhibit differences in the standards, strengths, and nomenclature of drugs in accordance with differences in national medical and pharmaceutical practice. Such differences in national standards for widely used materials constitute a source of danger to travelers who may need to have the same prescription dispensed in different countries, not only because the supply

of a drug may differ in strength from that to which the patient is accustomed, but also because of delays in receiving medicines that may have to be specially made or procured. Such differences, also, by causing confusion and misunderstanding, are a hindrance to the spread of medical and pharmaceutical knowledge and to international commerce. A state of affairs under which the same supply of a drug or chemical may be accepted in one country and rejected in another may lead to the retention of lower standards in manufacture, whilst the maintenance of a common high standard would tend to economy of production and would facilitate commerce between the nations."

Public health workers have a special concern in international standards of drugs, especially in view of the urgent demands being made on them for international service. They have need to be assured that a drug purchased in one country will meet certain specified standards. The committee on revision of the *Pharmacopoeia of the United States of America* has had an active member of the Commission responsible for this volume in Dr. E. Fullerton Cook, so that there is a close relationship between United States standards and those prescribed by this volume. It also includes standards for vitamins and various biological products, including antitoxins and tuberculin.

The WHO is to be congratulated on this first edition.

REGINALD M. ATWATER

An Analysis of the Multi-Test Clinic of Richmond, Virginia—*By Walter E. Boek, with the assistance of Jean K. Boek. New York: Health Information Foundation, 420 Lexington Ave.*, 1951. 267 pp. Price, $1.50.

This monograph was prepared as a result of a research project by the staff of the Health Information Foundation, following many requests for information on the concept of multiple screening. It consists of an extensive review of the literature and the straight-run analyses of six sample groups of people involved in the Multi-Test Clinic of Richmond. The groups interviewed were: (a) 299 persons interviewed on entering the Clinic, (b) 301 persons on leaving the Clinic, (c) 392 persons at least three months after having gone through the Clinic, (d) an area probability sample of 564 households, in 24 per cent of whom some member had attended the Clinic, (e) 23 physicians interviewed by a staff sociologist, (f) representatives most closely connected with the medical program of 13 industrial firms, of whom 8 were in the Clinic circuit.

The findings of the interviews with these groups are reported factually without comment. Attention is called to the influence of the location and time of operation of the Clinic. Considerable variation was observed between the actual and the presumed reasons why people did not attend the Clinic.

Abstracts of the literature are provided with regard to: (a) the concept of multiple screening, (b) planning and administering multi-test programs, and (c) descriptions of multiphasic screening programs. (Some important papers opposing the methods are omitted.)

The data did indicate that new cases of chronic disease were discovered and that new relationships were established among health agencies in Richmond, and between patients and physicians.

Besides furnishing new data and making readily accessible the gist of the literature, another objective was to develop experimental designs which would contribute to knowledge and be useful to health people who are carrying out action programs.

The monograph achieves its purposes and is an important resource for public health workers concerned with multiphasic screening.

ROSCOE P. KANDLE

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Demographic Intelligence — An all-time high of 3,900,000 births, a new low in infant mortality, and a low general death rate (9.7) plus a little immigration produced an estimated 2,650,000 population increase last year, notwithstanding the very considerable and regrettable deaths among the armed forces.

ANON. Large Population Gain in 1951. *Statist. Bull. Metrop. Life Insur. Co.* 32, 12:1 (Dec.), 1951.

And Other Health Workers, Too! —"Doctor, what plans (for your estate) have you made?" This sharp question at the conclusion of a highly suggestive paper rings a bell—for some strange reason—with me. It should with you but probably won't.

APPLEMAN, J. A. Even Physicians Die. *J.A.M.A.* 147, 16:1547 (Dec. 15), 1951.

Overseas' Practices—This British M. O. H. begins his paper: "More people are ill because they are unhappy than are unhappy because they are ill. And he ends it: "Mental health is everybody's job, yet in the past it has been anybody's job and nobody's in particular." In between is a discussion of his efforts to encompass mental health in community health services.

BURN, J. L. Preventive Aspects of Mental Health. *Pub. Health* 65, 3:45 (Dec.), 1951.

Worms, et al.—Readiness to suspect parasitic infections is the burden of this paper, and a useful one, which all home-visiting nurses and clinical workers might well take to heart.

CHAPMAN, M. L. Have You Met the Parasite Family? *Pub. Health Nursing* 44, 1:16 (Jan.), 1952.

Disease, Age, and Sex—Unforgettable are the contrasts in the lopsided curves of these charts: acute illness is represented by sharply tilted graphs, high in the young age groups and flatly low in the old; whereas chronic condition curves start low only to mount higher and higher with age.

COLLINS, S. D., *et al.* Disabling Illness from Specific Causes Among Males and Females of Various Ages. *Pub. Health Rep.* 66, 50:1649 (Dec. 14), 1951.

Five Aphorisms—"The whole purpose of public health services is to put the knowledge of preventive medicine, of personal hygiene, and of environmental sanitation to work by all capable of understanding and following the teachings of human biology.

"Public education, information, and guidance are the foundation of personal and community understanding of self-protection and self-development. Public health cannot be given to a community or bought by people as a commodity.

"Health is the end-product of inheritance, environment, and intelligent management of our individual lives. Health depends on character at least as much as on knowledge.

"The department of public health of a modern American community is that instrument of society devoted to realizing the benefits of the sciences of preventive medicine for its own community.

"The quality of public health services provided by local government is the best index of the intelligence and imagination of the people of any community."

EMERSON, H. Public Health and Medical Care for the Community and the Individual. *J.A.M.A.* 148, 1:41 (Jan. 5), 1952.

Putting Adversity to Good Use—Suggestive findings are submitted here to substantiate the assumption that polio

is a person-to-person propagated disease, and that the reported-upon epidemic was not caused by a common vector.

FALES, W. T., and TABACK, M. Observations on the Epidemiology of Poliomyelitis. *Pub. Health Rep.* 67, 1:47 (Jan.), 1952.

Not by Lectures Alone — How medical students at the University of Pennsylvania are exposed to the idea of preventive medicine is interestingly told. Means were devised by which each student during summer assignments was brought in intimate contact with community health services of one kind or another.

HUBBARD, J. P. Training the General Practitioner for His Job in Public Health. *Pennsylvania M. J.* 54, 12:1139 (Dec.), 1951.

A Question of Fat—Antidote for food fads and half-baked nutritional theories is this: "... the only reasonable goal in nutrition is a lifetime concept of good food habits."

KING, C. G. Trends in the Science of Food and Its Relation to Life and Health. *Nutrition Rev.* 10, 1:1 (Jan.), 1952.

"A Really Remarkable Achievement"—For two years New York State has gone seriously about the business of improving facilities for the new-born in its hospitals. The early results are promising in more ways than preventing infantile diarrhea.

KORNS, R. F., *et al.* The Control of Communicable Disease in Hospital Nurseries for the Newborn: Progress Report, New York State Plan. *New York State J. Med.* 52, 1:39 (Jan. 1), 1952.

Answer: A Lot — What use do rural people make of available health resources? Why do they use them? More complete answers to both will be found in this follow-up survey of another that was called to your attention in the May, 1951, Bibliography. If you will really look up this paper, your previous failure will be atoned for.

LARSON, O. F., and HAY, D. G. Differential Use of Health Resources by Rural People. *New York State J. Med.* 52, 1:43 (Jan. 1), 1952.

Play vs. Fantasy — It is papers like this one—on what television does to children's behavior—that are of very considerable moment to health workers even though the subjects are not public health *per se*. You'll be well repaid for hunting out this paper but it will not improve your skills one iota in whatever job may now be yours—unless you are a health educator, full or part time.

MACCOBY, E. E. Television: Its Impact on School Children. *Pub. Opinion Quart.* 15, 3:421 (Fall), 1951.

Working Paper — In addition to the usual immunizations against diphtheria, tetanus, and pertussis, this paper presents the pros and cons of protection against measles, German measles, mumps, infectious hepatitis, typhoid, spotted fever, influenza, and rabies—not forgetting poliomyelitis after antigens.

MCGUINNESS, A. C. Review of Current Trends in Active and Passive Immunization. *J.A.M.A.* 148, 4:261 (Jan. 26), 1952.

Interpersonal Relations — People are not born to be leaders, this paper seems to conclude. When effective leadership happens, it is the result of someone's doing the right thing under the particular circumstances. What the right thing is and what the circumstances may be are both considered.

MCGREGOR, D. Leadership and the Conditions of Organizational Effectiveness. *Pub. Health Rep.* 67, 1:42 (Jan.), 1952.

Suicidal or Not—In a recent study, half the deaths from poisoning were found due to alcohol and a third were attributed to gas. Among the remaining six, the barbiturates were prominent and are steadily increasing in their relative position on the scale. Is this of interest?

MOORE, M., *et al.* Deaths From Poisoning. *New England J. Med.* 246, 2:46 (Jan. 10), 1952.

Where People Participate—Ways to induce laymen to take an integral part in community organization (not just to be cat's paws to pull out financial chestnuts, or to serve as chore boys) are considered in this understanding presentation.

PESKIN, S. A Challenge to Health Councils. *Pub. Health Nursing* 44, 1:29 (Jan.), 1952.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ANTIBIOTIC THERAPY. Henry Welch and Charles N. Lewis. Washington, D. C.: Arundel Press, 1951. 549 pp. Price, $10.00.

ATTAINING MANHOOD. George W. Corner. New York: Harper, 1952. 95 pp. Price, $1.50.

ATTAINING WOMANHOOD. George W. Corner (2nd ed.). New York: Harper, 1952. 110 pp. Price, $1.50.

BIOLOGICAL ANTIOXIDANTS. TRANSACTIONS OF THE FIFTH CONFERENCE, NOVEMBER 30–DECEMBER 1, 1950, NEW YORK, N. Y. Edited by Cosmo G. MacKenzie. New York: Josiah Macy, Jr. Foundation, 1951. 229 pp. Price, $3.75.

BLOOD CLOTTING AND ALLIED PROBLEMS. TRANSACTIONS OF THE FOURTH CONFERENCE, JANUARY 22–23, 1951. Joseph E. Flynn, Editor. New York: Josiah Macy, Jr. Foundation, 1951. 272 pp. Price, $4.00.

BRITISH HEALTH SERVICE. Julius Mansor. New York: League for Industrial Democracy, Inc. 26 pp. Price, $.25.

CARE OF THE MEDICAL PATIENT. Margene O. Faddis and Joseph M. Hayman. New York: McGraw-Hill, 1952. 632 pp. Price, $4.50.

CHEMISTRY AND TECHNOLOGY OF FOOD AND FOOD PRODUCTS. Vol. III. Morris B. Jacobs, Ph.D. New York: Interscience, 1951. 708 pp. Price, $15.00.

CHILD IN HEALTH AND DISEASE. Clifford G. Grulee and R. Cannon Eley. Baltimore: Williams & Wilkins, 1952. 1240 pp., 333 illus. Price, $15.00.

CLINICAL PRACTICE IN INFECTIOUS DISEASES. E. H. R. Harries and M. Mitman. Baltimore: Williams & Wilkins, 1951. 698 pp. Price, $6.50.

COMMUNITY HEALTH EDUCATION IN ACTION. Raymond S. Patterson and Berl J. Roberts. St. Louis: Mosby, 1951. 346 pp. Price, $4.50.

DETROIT'S HEALTH IN 1950. Annual Report, 1950. Vol. XXXV., No. 1. Detroit, Mich.: City Health Department, 1951. 81 pp.

EVERYDAY SAFETY. William A. Evans. Chicago: Lyons and Carnahan, 1952. 302 pp. Price, $1.32.

FIRST-AID TRAINING—A STUDY AND PRACTICE BOOK. Morris Fishbein and Leslie W. Irwin. Chicago: Lyons and Carnahan, 1951. 232 pp.

GUIDE FOR LOCATIONS FOR PHYSICIANS—MISSISSIPPI. Jackson: Mississippi State Board of Health, 1951. 9 pp.

HEALTH COUNSELING. Milton Schwebel and Ella Freas Harris. New York: Chartwell House, 1951. 238 pp. Price, $3.00.

HEALTH INSTRUCTION YEARBOOK, 1951. Oliver E. Byrd. Stanford, Calif.: Stanford University Press, 1952. 226 pp. Price, $3.50.

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INTRODUCTION TO GROUP THERAPY. S. R. Slavson. New York: International Universities Press, 1952. 352 pp. Price, $3.50.

JOB OF THE PHYSICAL THERAPIST. American Physical Therapy Association. New York: 1790 Broadway, 1951. 14 pp. Price, $.50.

MATERNAL MORTALITY IN ALABAMA, 1944–1948, A REPORT OF THE FIVE-YEAR STUDY OF. Committee on Maternal and Child Health of the Medical Association of the State of Alabama. Montgomery, Ala.: State Department of Health, 1951. 94 pp.

MEDICAL MILESTONES. Henry J. L. Marriott, with a Foreword by Sir Alexander Fleming. Baltimore: Williams & Wilkins, 1952. 293 pp. Price, $3.50.

MIGRANT FARM LABOR IN COLORADO. A STUDY OF MIGRATORY FAMILIES. Report prepared by Howard E. Thomas and Florence Taylor. New York: National Child Labor Committee, 1951. 117 pp. Price, $1.25.

MODERN DIETARY TREATMENT. Marjory Abrahams and Elsie M. Widdowson (3rd ed.). London: Bailliere, Tindall & Cox, 1951. 355 pp. Price, 21s.

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PROPOSED HOUSING ORDINANCE REGULATING SUPPLIED FACILITIES, MAINTENANCE, AND OCCUPANCY OF DWELLINGS AND DWELLING UNITS. Committee on the Hygiene of Housing, A.P.H.A. New York: American Public Health Association, 1952. 24 pp. Price, $.50.

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SPEECHES MADE EASY. HERE'S HOW. Ben Solomon. Putnam Valley, N. Y.: Youth Service, Inc., 1951. 39 pp. Price, $1.00.

STANDARD NOMENCLATURE OF DISEASES AND OPERATIONS. Richard J. Plunkett, Editor, and Adaline C. Hayden, Associate Editor. Published for the American Medical Association. New York: Blakiston, 1951. 1034 pp. Price, $8.00.

STEPS TOWARD PREVENTION OF CHRONIC DISEASE. SUMMARY OF THE NATIONAL CONFERENCE ON CHRONIC DISEASE: PREVENTIVE ASPECTS, HELD MARCH 12–14, 1951. Chicago, Ill.: Health Publications Institute, 1952. 31 pp. Price, $.50.

UNDERSTANDING YOUR MIGRAINE HEADACHE. Caro W. Lippman and Margaret Lippman. New York: Greenberg, 1952. 150 pp. Price, $2.50.

URINE AND THE URINARY SEDIMENT. Richard W. Lippman. Springfield, Ill.: Charles C Thomas, 1952. 121 pp. Price, $7.50.

ZOOLOGY OF TAPEWORMS. Robert A. Wardle and James Archie McLeod. Minneapolis, Minn.: University of Minnesota Press, 1952. 665 pp. Price, $12.50.

Motion Picture Film Reviews

HOMER N. CALVER, *Film Review Editor*

Losing To Win. Weight control through diet. 16 mm. Color. Sound. 11 minutes. Sponsored by the Metropolitan Life Insurance Company, in cooperation with the Public Health Service, the American Medical Association, and other health agencies. The film is being released to health agencies and other noncommercial users after theatre bookings in each state have been completed. For availability in your state, for free loan, write Metropolitan Life Insurance Company, Health and Welfare Division, 1 Madison Ave., New York 10, N. Y.

Reliable information on the important health problem of weight control is amusingly and interestingly portrayed in this film, which is to be used in a campaign to induce Americans to lose one-half billion pounds.

The story of the film centers around a young couple who are entertaining guests for dinner. While the guests are enjoying a second serving of cake, the host suggests the viewing of an interesting television program, "Cheers for Chubby." The hero of this animated film within a film is Mr. Chubby, who, with his wife, are depicted as victims of an exaggerated love of food. Rude awakenings in regard to their greatly increased size lead to a visit to their doctor, who prescribes a dietary regime. The progress of the Chubbys is depicted, with highlights on essential foods in their diet; pitfalls, such as chocolate sauce and that extra pat of butter; the role of will power and determination when setbacks are apparent; and the ultimate triumph of trim figures. At the close of the television program the young couple reveal to their guests their identity as Mr. and Mrs. Chubby and discuss the many benefits derived from their loss of excessive weight.

The film is noteworthy in a number of respects. The animated presentation is humorous, interesting, and challenging. Facts are presented dramatically and graphically, yet without the smack of lecturing. The debunking of certain fads and fallacies is especially effective.

Since overweight is a definite threat to health, the use of the film should be heralded as an excellent educational tool to promote better living.

HENRIETTA FLECK

Chick Embryo Techniques. 16 mm. Black and white. Sound. 15 minutes. Produced by Communicable Disease Center, Atlanta, Ga., from which it may be borrowed without charge.

The title "Chick Embryo Techniques" is misleading. The film portrays only one basic approach to the chick embryo technique, namely, cutting a window in the shell. A person who has had no previous information about chick embryo techniques is more apt to be confused than enlightened by this film. It fails to indicate the method of choice for inoculation of the yolk sac; it fails to demonstrate the dropping of a membrane concurrently with inoculation; it omits the method preferred by many for the allantoic and amniotic routes of infection. If the title of the film were changed to represent more accurately what the film portrays, it might then be made useful for an instructional film for beginning technicians.

Meanwhile, in the opinion of this reviewer, the film, before circulation, should be rearranged to include techniques more widely applicable and should be reëdited with respect to the commentary accompanying it.

JOHN C. SNYDER

RECENT MOTION PICTURE RELEASES

Face of Youth. Preventive approach to the emotional problems of children. 16 mm. Sound. Black and white. 28 minutes. Produced for the Wisconsin State Board of Health, Division of Mental Hygiene. Purchase price, $90; to rent, $3.50. Address requests to Bureau of Visual Instruction, University of Wisconsin, 1312 West Johnson Street, Madison 6, Wis.

How Billy Keeps Clean. Relationship of cleanliness to proper health habits. Produced for use with high school groups and adults. 16 mm. Sound. 10 minutes. Color version and black and white available from the producer, Coronet Films, 65 E. South Water St., Chicago 1, Ill. $100 for color print; $50 for black and white. Consult local film rental libraries for rental fee.

Problem of Bacteria in Milk
and
What's In It For Me? These two films dealing with dairy routines were produced for the Pennsylvania Salt Manufacturing Co. for the use of field men but have now been released for general showings. Each film is 16 mm.; has color and sound; runs 20 minutes. Prints may be borrowed without cost. Address requests to the company at 1000 Widener Building, Philadelphia 7, Pa.

Rx, The Story Behind Your Doctor's Prescription. Nontechnical documentary picture showing production of some of the modern "wonder" drugs. 16 mm. Sound. Black and white. 20 minutes. Produced by Louis de Rochement for E. R. Squibb & Sons, from whom prints may be borrowed without cost. Address requests to 745 Fifth Ave., New York 22, N. Y.

Story of Lucy. The professional teamwork which can restore paraplegics to usefulness. 16 mm. Sound. Color. 17 minutes. Produced for the Kessler Institute of Rehabilitation, Pleasant Valley Way, West Orange, N. J., from which prints may be borrowed free.

ASSOCIATION NEWS

STUDIES IN SANITATION ADMINISTRATION—ENGINEERING SECTION PROJECT

Information is now becoming available from an examination of the work load and time study data submitted by some 40 health departments coöperating in the research studies carried on by the Engineering Section Project. The studies were made possible by a grant of funds from the Public Health Service and covered the three year period from 1949 through 1951. The characteristics of the health departments coöperating in the study and information regarding the educational qualifications of the sanitation personnel were described in the August, 1951, *Journal*, page 1027.

The coöperating health departments have been recording relevant data on all actions of environmental sanitation personnel for one full week in each quarter of 1951. Collection of field data was terminated December 1. The data are now being processed and analyzed. More than 225,000 individual actions must be tabulated. The completed studies should show such facts as the average length of time required to make various kinds of field inspections, reinspections, field visits, sample collections, and house-to-house surveys; including the average travel time required for field travel, such as for inspecting food establishments, milk producer dairy farms, schools, septic tanks, etc. The *pro rata* portion of office time, unavoidable delays, vacation, etc., chargeable to each program, will probably become available, as will other related information.

As a result of pilot studies carried on in 1949 and 1950 in seven different local health departments, the code used in classifying the activities reported each day by sanitation workers has gone through five revisions. The present, or fifth, revision of the code was adopted early in 1951 and has been used continuously during the present study.

Under the present code all actions carried on in local health departments are classified under one of 12 activities as follows:

1. Standard written field inspection
2. Partial written field inspection (reinspection)
3. Field visit (no record)
4. Survey, house to house
5. Sample collection and analysis
6. Travel
7. Office activities
8. Inservice training
9. Health education
10. Unavoidable delay
11. Chauffeuring, custodial, and janitor services
12. Other

These activities are carried on in one of 19 principal programs. Arranged alphabetically, they are: accident prevention; air pollution; animal diseases transmissible to man; emergency sanitation; food sanitation; housing; industrial sanitation; insect control; meat sanitation; milk sanitation; nuisances (special services); refuse, solid wastes sanitation; rodent control; sanitation of public or quasi-public business establishments; school sanitation; sewerage and liquid wastes; swimming and bathing sanitation; water sanitation; and, in order to complete the code, "other."

Subheadings have been added under these programs so that there results a total of 130 items, thus making possible a total of 1,560 theoretical combinations of program activities. The percentage of time devoted on an average to each program is being calculated by quarters of the year to show variations in seasonal activities. Variations by geographical regions in which health departments are located, by density of population, and

by type of organization are also being studied.

Based on records submitted by 37 health departments, the percentage of time devoted to the various sanitation programs during the first and second quarters of 1951 were:

Program	Percentage of Total Time Expended 1st quarter	2nd quarter
Food sanitation	29.2	27.1
Milk sanitation	23.8	21.1
Sewerage, liquid wastes	10.8	14.5
Meat sanitation	6.9	8.0
Nuisances	6.2	6.2
Rodent control	4.0	2.9
Water sanitation	3.9	4.1
Public and quasi-public establishments	3.4	3.3
Refuse, solid wastes	2.9	2.9
School sanitation	2.4	1.3
Animal diseases	2.3	2.5
Housing	1.2	0.4
Insect control	1.0	2.8
Emergency sanitation	0.8	0.4
Industrial sanitation	0.4	0.7
Swimming	0.4	1.2
Other	0.4	0.5
Air pollution	*	0.1
Accident prevention	*	*
	100	100

* Less than 0.05%

It must be borne in mind that figures reported in these studies represent the average conditions prevailing in the spring of 1951 in the 37 health departments studied. Approximately 5 per cent of the population covered by full-time health services in the country are included in the study. The health departments are fairly well scattered regionally and include all types of organizations except the state district type of health department which seeks to provide services at the local level. The data presented must be considered in the light of these facts.

These data should be useful in many ways. They should provide a rational basis for estimating the amount of time needed to carry on any of the programs for which group figures are available. They should show, for example, the time expenditures being made to maintain milk sanitation programs with an overall rating of 90 or better for milksheds having a given number of dairy farms and pasteurizing plants which pasteurize a given percentage of the milk supply; also for maintaining food sanitation programs with ratings of 85 per cent or better for a given number of eating and drinking establishments.

The studies will probably point up the need for additional criteria or standards by which to judge quality of program and accomplishment. Meanwhile, the sanitation practices of the coöperating group of health departments will be recorded for study and analysis. A final report will be prepared as soon as all data have been analyzed.

PORTUGUESE TRANSLATION

The seventh edition of *Control of Communicable Diseases in Man* has been translated into Portuguese under the auspices of the Pan American Sanitary Bureau for use in Brazil and other Portuguese-speaking countries.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Durward Blakey, M.D., Coahoma County Health Dept., Clarksdale, Miss., Director

B. T. Dale, M.D., D.P.H., Wellington County Health Unit, Fergus, Ontario, Canada, Director

Donald G. Dickson, M.D., Box 935, Kingston, N. Y., Resident Public Health Physician, New York State Dept. of Health

Edward F. Gliwa, M.D., 132 W. Main St., Newark, Del., Deputy State Health Officer, State Board of Health

Seth E. Libby, 39 Cottage St., Bar Harbor, Me., Health Officer, Town of Bar Harbor

E. Mae McCarroll, M.D., M.P.H., 59 Hillside Place, Newark, N. J., Clinic Physician, Newark Dept. of Health

Albert E. Pagan, M.D., 406 N. Royal Ave., Front Royal, Va., Local Health Officer, Page, Warren and Shenandoah Counties

James M. Willett, M.D., 307 West "G" St., Elizabethton, Tenn., Director, Carter, Unicoi and Johnson Health Dist.

Laboratory Section

David C. Y. Chu, Univ. of Oregon Medical School, Portland 1, Ore., Graduate Student

Howard W. Dunne, D.V.M., Ph.D., Dept. of Bacteriology, Michigan State College, East Lansing, Mich., Assoc. Professor of Bacteriology and Public Health

Kermit E. Goddard, 321 Yoakum Ave., Chaffee, Mo., Laboratory Technician III, Div. of Health of Missouri

Eugene A. Gorzynski, Children's Hospital, 219 Bryant St., Buffalo, N. Y., Asst. Research Bacteriologist

Perry C. Martineau, M.D., 1151 Taylor St., Detroit 2, Mich., Asst. Professor of Pathology, Wayne Univ. College of Medicine

Statistics Section

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Patricia J. Johnson, 308 Macon, Louisville 7, Ky., Clerical Training Supervisor, State Dept. of Health

Gene Kaufman, 609 Jefferson St., N.E., Washington 11, D. C., Biostatistician, Div. of Public Health Methods, USPHS, Washington, D. C.

Maude Perry, 333 W. 16th St., Indianapolis 2, Ind., Health Program Analyst, USPHS

Pauline J. Sinclair, M.A., 112 S. State St., Salt Lake City 1, Utah, Research Secy., Community Welfare Council

Engineering Section

Frederick Nevins, 42 Broadway, PHS, Reg. 2, New York, N. Y., Asst. Sanitary Engineer, North Atlantic Drainage Basins Office, Div. of Water Pollution Control, USPHS

Richard W. Ragan, 9848 Elaine Rd., Jacksonville, Fla., Sanitary Engineer, State Board of Health, Bureau of Sanitary Engineering

Hillel Shuval, 524 Elm St., Ann Arbor, Mich., Asst. to the Director, Div. of Sanitation, Ministry of Health, Israel

John S. Stock, 202 Harrison St., Elkhart, Ind., Sanitary Engineer, Elkhart County Health Unit

Industrial Hygiene Section

Gilbeart H. Collings, Jr., M.D., M.P.H., 417 N. Pine St., Florence, Ala., Chief, Occupational Health Branch, Div. of Health and Safety, Tennessee Valley Authority

Irma M. West, M.D., 2002 Acton St., Berkeley, Calif., Physician and Surgeon, Bureau of Adult Health, Dept. of Public Health

Food and Nutrition Section

Azmi Afifi, Ph.D., 16 Saleh Ayoub St., Zamalek, Cairo, Egypt, Lecturer, Food Technology Dept., Ibaahim Univ., Cairo, Egypt

John T. F. Hazell, New Montrose, St. Vincent, B. W. I., Inspector of Meat and Food, Kingstown Abattoir

Sallie A. Redmond, M.S., 1323 4th, Clarksdale, Miss., District Nutritionist, Mississippi State Board of Health

Maternal and Child Health Section

John F. Bell, M.D., 288 Main St., Burlington, Vt., Director, Crippled Children's Division, State Dept. of Health

Robert W. Deisher, M.D., 4348 Union Bay Lane, Seattle 5, Wash., Director, Child Health Center, Dept. of Pediatrics, School of Medicine, Univ. of Washington

Public Health Education Section

Marguerite Abbott, 270 Park Ave., New York, N. Y., Exec. Director, The Medical Coordinating Council for Cerebral Palsy in New York City, Inc.

Rose Bernstein, 1535 E. 29th St., Brooklyn 29, N. Y., Health Publicity Asst., New York City Dept. of Health

Doris C. Blaisdell, 6204 Lombard St., Cheverly, Md., Public Health Advisor, Div. of State Grants, USPHS

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John T. Connolly, M.S.P.H., Ulster County Tuberculosis and Health Assn., 74 John St., Kingston, N. Y., Health Education Asst.

Ann D. Horton, 370 Temple St., New Haven, Conn., Student, Yale School of Public Health

Emily K. Lydon, M.A., 226 E. Fordham Road, New York 58, N. Y., Consultant, Health Education, New York Tuberculosis and Health Assn.

Douglas K. MacDonald, M.P.H., City Hall, Victoria, B. C., Canada, Public Health Educator, Victoria-Esquimalt Health Dept.

Anna McCrohan, 210 Madison Ave., Memphis, Tenn., Health Secy., Community Council of Memphis-Shelby County

John L. Meyer, II, M.D., Films Office, O.S.G.,

USPHS, Federal Security Bldg., Washington 25, D. C., Asst. Surgeon, USPHS(R), Consultant in Medical Audiovisual Education

Gail I. Palmer, M.P.H., 1422 Horace Mann Ave., Winston-Salem, N. C., Health Educator, City-County Health Dept.

Nicholas C. Read, 4303 Elm St., Chevy Chase, Md., Films Officer, USPHS

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Melvin Stein, M.S.P.H., City Hall, Room 608, Milwaukee, Wis., Public Health Educator, Milwaukee Health Dept.

Reinaldo Pino Varas, M.D., Cristina 154, Cienfuegos, Cuba, Chief, Local Board of Sanitary Dept.

Public Health Nursing Section

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Margaret A. Barnett, R.N., 276 Haili, Hilo, Hawaii, Asst. Supervisor of Public Health Nursing, Dept. of Health

Albina A. Bozym, State Health Dept., CDC, Little Rock, Ark., Nurse Epidemiologist

Edith P. Brocker, R.N., M.A., 16 Rogerson Drive, Chapel Hill, N. C., Supervising Public Health Nurse, District Health Dept.

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Mildred V. McIntyre, R.N., 3709 West Park Road, Cleveland 11, Ohio, Director of Public Health Nurses, Cleveland Division of Health

Dorothea K. Money, R.N., Box 427, Route 5, Waukesha, Wis., Supervising Nurse, Wauwatosa Health Dept.

Nettie O. Remington, P.O. Box 665, Vernal, Utah, Nursing Supervisor, Health District 5

Blanche L. Vincent, 123 Montgomery, Raleigh, N. C., Consultant Nurse, State Board of Health

Anna M. Zaklarič, M.P.H., Box 960, c/o Branch Office, Dept. of Health, Anchorage, Alaska, District Nursing Supervisor

Epidemiology Section

Edward K. Markell, M.D., Ph.D., UCLA School of Medicine, Los Angeles 24, Calif., Asst. Professor of Infectious Diseases (Parasitology and Tropical Diseases)

Edward O'Rourke, M.D., M.P.H., City Hall, Cambridge, Mass., Health Commissioner

School Health Section

Georgia L. Cole, 648 Lander St., Reno, Nev., Teacher, Reno School District 10

Harry Henderson, M.D., Park Place Ave., Elm Grove, Wheeling, W. Va., Director, Division of School Health, Kentucky State Health Dept.

Harold Herman, M.D., 229 E. 79th St., New York 21, N. Y., Pediatrician, Bureau of School Health, New York City Dept. of Health

Herman Lubenstein, M.D., 735 Pelham Parkway, North, New York, N. Y., Consulting Pediatrician, Bureau of School Health, New York City Dept. of Health

Medical Care Section

Edna R. Craig, 2710 Webb Ave., New York 63, N. Y., Medical Case Worker, Montefiore Hospital

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Eleanor Margolin, M.S.S., 99–16 67th Road, Forest Hills 75, N. Y., Senior Medical Case Worker, Montefiore Hospital

Mozart I. Spector, 4420 First Place, N.E., Washington, D. C., Analytical Statistician, USPHS, Division of Chronic Diseases and Tuberculosis

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Unaffiliated

James H. Bates, M.Ed., 315 Shelburne St., Burlington, Vt., Exec. Director, Vermont Tuberculosis and Health Assn.

Mary Beaty, 420 Lexington Ave., New York 17, N. Y., Acting Director, Scientific Research, J. Walter Thompson Co.

Maurice H. Bull, R.N., 4422 Third Ave., New York 57, N. Y., Administrative Resident, St. Barnabas Hospital

Joseph C. Schnell, The Hobart Manufacturing Co., Troy, Ohio, Sales Manager, Dealer Division

W. A. Shoemaker, State Sanatorium, South Mountain, Pa., Business Manager, Pennsylvania Dept. of Health

Marcella L. VanTuyl, 433 W. 21st St., New York, N. Y., Public Relations Administrator, City of New York Dept. of Welfare

A.P.H.A. membership application blank on page XXXI

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Bacteriologist and Chemist — experienced in food or beverage industry, for position as director of laboratory and technical services of established national trade association. Preference given to man capable of addressing meetings and writing for publication. Position is one of responsibility and provides excellent opportunity for qualified person. In reply, please give brief personal history, including references and salary range. Write: **Box LD-16,** Employment Service, A.P.H.A.

Vector Control Specialists—Opportunities in California with State Department of Public Health. Several vacancies with salaries ranging from $5,232 to $6,360. Qualifications are 4 years of full-time paid experience in sanitary or public health engineering; or in entomology and including 2 years experience in vector control (1 year of graduate work in sanitary or public health engineering, entomology, or parasitology may be substituted for 1 year of nonvector control experience). Also required is education equivalent to graduation from college with specialization in engineering or the biological sciences. Employment is in Berkeley and travel may be required. Write: State Personnel Board, 1015 "L" St., Sacramento 14, Calif.

Educational Director; also **Supervisor**—Combination agency, generalized program, including bedside care. Forty hour week, cumulative vacation and sick leave, retirement. Good salary. Write: Executive Director, The Visiting Nurse Association, 401 Municipal Bldg., Dayton 2, Ohio.

Public Health Sanitarians I and **II**—Pay range $4,016–4,736 and $4,736–5,456. Employees in these positions receive paid vacations, sick leave and automatic salary increases, and participate in a liberal retirement program. Write: Wayne County Civil Service Commission, 2200 Cadillac Tower, Detroit 26, Mich.

Sanitarian—to supervise a state food and milk program, who has 4 years experience in the field of sanitation, 2 years of which were in an administrative capacity in a public health agency, plus master's degree in public health. Salary $450 with yearly increases. Write: Personnel Officer, Colorado State Department of Public Health, State Office Bldg., Denver, Colo.

Supervisor of Nurses—Salary range $4,200–4,500, depending on qualifications and experience. Car furnished or liberal allowance granted if driving personal car. Pension system, vacation and sick leave granted.

Staff nurse—Starting salary $3,340. Car furnished or liberal allowance granted if driving personal car. Pension system, vacation and sick leave granted. Write: Mr. Edward Peters, Acting Health Officer, City Hall, La Crosse, Wis.

Nurse Midwife—Direct delivery service. Write: Hannah Mitchell, Maternal and Child Health Division, Georgia Department of Public Health, Atlanta, Ga.

Pediatric Public Health Consultant Nurse—Entrance salary $340 with advancement to $440, plus 6 cents a mile travel. Degree, training and experience in generalized public health nursing, specialized training in pediatrics. Necessary to own car.

Obstetrical Nurse—Research in hospital, outpatient, abnormal obstetrics clinic. Beginning salary $270 with advancement to $345. Required: three-academic-quarters course in public health, with 2 years experience in generalized public health program. Write: Miss Theodora Floyd, Director, Nursing Division, Georgia Department of Public Health, Atlanta, Ga.

Qualified Supervising Nurse and six qualified **Staff Nurses**—for voluntary agency in industrial and cultural community of 500,000. Accessible to university carrying P.H.N. program. Field training center. Program includes bedside and orthopedic nursing; maternity and new-born care; classes for expectant parents; preschool conferences; part-time industrial nursing. Excellent employment practices. Staff salary range $260 to $310. Supervisor salary open. Write: Helen E. Hestad, Visiting Nurse Association, 242 N. Meridian, Indianapolis, Ind.

Public Health Nurse—for staff position. Generalized program. Salary $2,520 to $2,820. Five day week, 1 month vacation, and sick leave, retirement benefits. Minimum qualifications, one semester in public health nursing or student affiliation. Write: Department of Public Health, Waterbury, Conn.

Staff Nurse—Generalized public health

nursing program including school work and bedside care on demonstration and supervision basis; excellent clinical and consultant facilities; active student program. Car optional, mileage allowance 7½ cents. Good personnel policies. Degree and minimum public health training. Minimum salary $2,988; salary dependent on experience and qualifications. Write: Miss Dorothy E. Anderson, Supervisor of Public Health Nursing, Rochester-Olmsted County Health Unit, Public Health Center, Rochester, Minn.

Assistant Nursing Supervisor—Experienced public health nurse with special training or experience in tuberculosis work, to correlate nursing service and case finding program, with special planning for follow-up of cases and contacts. Limited amount of field work. State training and experience. Salary $3,000–3,500, depending on qualifications, plus travel. Write: Dr. Paul M. Golley, Chattanooga-Hamilton County Health Department, Chattanooga, Tenn.

Bureau of Public Health Nursing, Department of Health, Territory of **Hawaii**, has need of **Staff Nurses** in generalized program. Salary starts at $262.50 for nurse with a 1 year accredited course in public health nursing and 1 year of successful experience. Vacation and sick leave each computed at the rate of 1¾ days per month worked. Five day week, retirement plan. Write air mail (6 cents) to: Territorial Civil Service Commission, Honolulu 2, T. H.

Health Officer—for newly created Egyptian Health Department, located in the "Little Egypt" section of Southern Illinois and serving the Counties of Gallatin, Saline, and White. Population 64,173. Position open at once. Candidate should be prepared to create and maintain a good program of local health services and should have capacity for excellent public and human relations. Salary up to $11,000, depending on experience and training. Write: Mr. Horace Brown, Secretary, Egyptian Board of Health, Shawneetown, Ill.

Health Officer—for city of 50,000. Training and experience necessary. Salary $9,000. Usual vacation, sick leave, and retirement benefits. Diversified program in a progressive community. Write: A. J. McCarey, M.D., Northern Bldg., Green Bay, Wis.

Physicians—with or without public health training, and **Pediatricians**, needed in maternal and child health program at salaries from $6,446 to $9,200. Five day week, pension, civil service appointment. Write: E. R. Krumbiegel, M.D., Milwaukee Health Department, City Hall, Milwaukee, Wis.

Health Officer and School Physician—for Town of Fairfield, Conn. Population 34,000. Starting salary $8,240. Full-time position. M.P.H. degree desired but not required. New department, fully staffed, in need of progressive leadership. Write: S. L. Joslin, M.D., Chairman, Board of Health, Town of Fairfield, Conn.; or telephone Fairfield 9–3205.

Health Officers—**(1)** Umatilla County, Pendleton, Ore., (home of famous Round-up) located on Old Oregon Trail at foot of Blue Mountains in Eastern Oregon. $10,000 to start, plus travel expenses. **(2)** Tri-County District Health Department located at Bend, Ore., on east slope of Cascades. Year-round vacation and sport center. Salary range $8,400 to $10,020, plus travel expenses. Both positions require M.P.H. and experience. Must be eligible for license to practise medicine in Oregon. Merit System providing tenure, vacation, sick leave, etc. Write: H. M. Erickson, M.D., State Health Officer, State Office Bldg., Portland, Ore.

Assistant Health Officer — Arlington County, Va. Requirements: must be graduate of Class A medical school; eligible for Virginia license; have 1 year postgraduate study in public health at an approved school or the equivalent in experience. Salary range $5,620–7,060, retirement for those under 39; 5 day week. Health Department is accredited for residency training for physicians qualifying for the American Board of Preventive Medicine and Public Health; has affiliation with several universities for training postgraduate students. Write: Personnel Director, Court House, Arlington, Va.

Assistant Health Officer—Opportunity for young physician in large county. Generalized program in public health. Previous experience and training desirable but not essential. Salary $7,500–8,250, plus car allowance and official expenses. Write: **Box PH–28**, Employment Service, A.P.H.A.

Public Health Physician—to be chief of Division of Communicable Diseases. Department approved for residency training. Salary $7,200 to $8,100, depending upon training and experience; automobile allowance $960 yearly. Excellent retirement system.

District Health Officer—a district of approximately 250,000 people in West Suburban Cook County. Salary up to $7,200, depending upon training and experience; automobile allowance $960

yearly. Write: Cook County Department of Public Health, 737 South Wolcott Ave., Chicago 12, Ill.

Staff School Nurse—for small, well organized school health department; loveliest spot on the Pacific Coast. Beginning salary $3,350–3,600, depending on training. Thirty-five hour week. Work 9 calendar months, 2 weeks vacation Christmas, 1 week Easter. Annual increment for 10 years up to $5,500; tenure after 3 years. B.A. and P.H.N. degrees, own car. Send photograph; specify age, degrees, training, and experience, marital status, number of children.

Write: **Box Mi-5**, Employment Service, A.P.H.A.

POSITIONS WANTED

Public Health Engineer—Four years filter plant operating experience, 2 years as county and district public health engineer, 2 years as assistant engineer in state health department. Other public health experience. M.S. in Sanitary Engineering. Write: **Box E–16**, Employment Service, A.P.H.A.

Dentist—M.S. in Bacteriology. Desires teaching position in dental college or administrative work in dental division of public health agency. Background of Navy, hospital, and local public health work. Write: Everett A. Price, D.D.S., 514 E. Chamberlin, Dixon, Ill.

Young Artist—woman. Years of successful experience in therapeutic art work with children and adults. Anxious to find a part-time position in a hospital or rehabilitation setup in or near New York City. Excellent recommendations. Write: **Box M–7**, Employment Service, A.P.H.A.

Public Health Historian—American historian with 3 years of research, study in history of public health, wishes research, writing, or teaching position in this subject, preferably in Northeast. Write: **Box M–6**, Employment Service, A.P.H.A.

Sanitarian—has fulfilled requirements for Master of Science in Public Health and Bacteriology. Age 29, single, 4 years naval experience. Write: George E. Martel, 19 Avery St., Westfield, Mass.

Health Educator—M.S., M.P.H., L.T., H.S.D. Male, age 31. Background in public health and school health education programs. Native of India, trained in the United States; held responsible positions in the State Education Department, India. Interested in college teaching or health education with official or voluntary agencies, any part of the world. Write: **Box H.E.–35**, Employment Service, A.P.H.A.

ANNOUNCEMENTS

May 1, 1952, is the deadline for receipt of applications for Public Health Service research fellowships to begin between July 15, 1952, and March 14, 1953, Surgeon General Leonard A. Scheele has announced. Applicants will receive notification of Board action on or about July 15, 1952.

Applications for fellowships to begin between November 15, 1952, and July 14, 1953, should be submitted by September 1, 1952, and notification of action will be sent to applicants by November 15, 1952.

Applications and supporting documents should be sent to the Division of Research Grants and Fellowships, National Institutes of Health, Bethesda 14, Md.

Regular Corps Examination for Nurse Officers

United States Public Health Service

The United States Public Health Service will hold a competitive examination for the appointment of Nurse Officers in the Regular Corps on June 3, 4, and 5, 1952, in various cities throughout the country. Completed applications must be in the Washington office by April 30, 1952. The examination will include written professional tests, an oral interview, and a physical examination.

Appointments are permanent and provide career opportunities in the fields of clinical and public health nursing. Appointments in clinical nursing will be made in the grades of Junior Assistant, Assistant, and Senior Assistant—equivalent to Navy ranks of Ensign, Lieutenant (j.g.), and Lieutenant respectively. Appointments to public health nursing positions will be made in the Assistant and Senior Assistant grades only. Entrance pay for officers without dependents ranges from $3,789 to

$5,166, including rental and subsistence allowances. Officers enjoy usual military benefits. Applicants must be United States citizens and must expect to complete the following requirements no later than March 3, 1953: registration as a graduate professional nurse; graduation from an approved school of nursing; receipt of a bachelor's degree from a recognized college or university. For appointments above the Junior Assistant grade, specific experience requirements have been established for both clinical and public health nurses.

For detailed information and application forms, write to: Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C., Attention: Division of Commissioned Officers.

Memorial Center for Cancer and Allied Diseases, Pediatric Department

announces

Comprehensive Three Day Course

May 21, 22, 23, 1952, for

Pediatricians, General Practitioners, Health Officers

Current developments and established methods in diagnosis, differential diagnosis, and management of benign and malignant tumors, Hodgkin's disease, leukemia, and reticuloendothelioses in childhood are included.

Content of Course—Demonstrations, examinations of children in pediatric, surgical, chemotherapy, radiotherapy clinics; ward rounds and seminars under the direction of the staffs of Memorial Hospital and Sloan-Kettering Institute for Cancer Research. Fee: $35.00.

For Information, Address: Director, Pediatric Service, Memorial Center, 444 East 68th St., New York, N. Y.

All communications should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

WANTED—(a) MEDICAL DIRECTOR, city-county health department; well staffed; adequate quarters; preferably one qualified to expand facilities; college town of 55,000. (b) DIRECTOR, student health department; outstanding administrator required; large university. (c) ASSISTANT MEDICAL DIRECTOR; county-city department; attractive location; Pacific Northwest. (d) PUBLIC HEALTH PHYSICIAN to serve as medical consultant; major philanthropic organization; duties involve some travel; $12,000–15,000. (e) SUPERVISING PUBLIC HEALTH NURSE AND THREE STAFF NURSES; generalized program including school nursing course provided; college town, California. (f) PUBLIC HEALTH NURSE to direct health service, liberal arts college; small town adjoining large city, university medical center; Midwest; minimum $4,000. (g) ASSISTANT PROFESSOR IN PUBLIC HEALTH NURSING; program recently established by eastern university. (h) PUBLIC HEALTH NURSING SUPERVISOR; metropolitan health department; Midwest; $4,500. (i) DIRECTOR OF NURSES, health department, university city; Pacific Coast. (j) ASSOCIATE PROFESSOR OF HEALTH EDUCATION; preferably woman with doctorate; graduate and undergraduate students; state university; around $6,000 for school year. (k) HEALTH EDUCATOR; state program; master's degree, minimum 5 year's experience; $4,500–6,500; East. (l) NUTRITIONIST to serve as consultant, tuberculosis association; Midwestern metropolis. (m) SANITARY ENGINEER for sanitation work with important health organization; foreign country. (n) INDUSTRIAL HYGIENIST; state health department; minimum 3 years' experience; $6,000–7,500. (If you will write for our ANALYSIS FORM, we shall prepare an individual survey of opportunities which meet your requirements. Please direct all inquiries to BURNEICE LARSON, THE MEDICAL BUREAU, PALMOLIVE BUILDING, CHICAGO.

WANTED—OPPORTUNITIES FOR THE FOLLOWING: (a) PUBLIC HEALTH PHYSICIAN; M.P.H., Johns Hopkins; for 5 years director health department (90 personnel); Diplomate. (b) PUBLIC HEALTH NURSING ADMINISTRATOR; B.S., M.P.H., eastern university; 3 years, director, health education, state university; 8 years' administrative experience in public health nursing. (c) HEALTH EDUCATOR; B.A., M.A., eastern university; 12 years, director of health education; associate professor, health education, state university. (d) INDUSTRIAL HYGIENE ENGINEER; M.S.; 4 years, food chemist, city health department; 5 years, director, bureau of industrial hygiene, state health department. (e) SANITARY ENGINEER; B.S. (Civil Engineering); 1 year's graduate training, Harvard Graduate School of Engineering; 12 years' experience. (f) STATISTICIAN; A.B. (major, Statistics; minor, Mathematics); 5 years of statistical research; 4 years, chief statistician, state department of health. (g) PUBLIC HEALTH DENTIST; D.D.S., Columbia; 1 year's graduate training in public health dentistry completed in June, for which he received M.P.H. degree. (h) NUTRITIONIST; Ph.D., well known in his field; 9 years, nutritionist, university medical school and state health department. Please direct all inquiries to BURNEICE LARSON, MEDICAL BUREAU, PALMOLIVE BUILDING, CHICAGO.

NEWS FROM THE FIELD

HEALTH SESSIONS AT MEETING OF U. S. COMMISSION FOR UNESCO

The Third National Conference of the U. S. National Commission for UNESCO was held in New York City at Hunter College, January 27–31, on the general topic, "The Citizen and the United Nations."

The Commission, an agency of the U. S. Department of State, held among the units of a varied program a Section Meeting organized in coöperation with the American Public Health Association on "Meeting World Health Problems." Chairman was C.-E. A. Winslow, Dr. P.H., editor of the *American Journal of Public Health*. Participants and their papers were:

The Need for Sound Administrative Planning—Joseph W. Mountin, M.D., Assistant Surgeon General, U. S. Public Health Service (Paper read by L. L. Williams, M.D., Chief, Division of International Health)

The Need For Personnel—Gaylord W. Anderson, M.D., Dr.P.H., president, American Public Health Association, and director, School of Public Health, University of Minnesota

The Need For Public Understanding And Support—Albert W. Dent, LL.D., president, Dillard University

The Need For Money Resources—Frank G. Boudreau, M.D., executive director, Milbank Memorial Fund

Rapporteur and Summarizer—Reginald M. Atwater, M.D., executive secretary, American Public Health Association

The audience, composed of invited participants representing a variety of citizen agencies, discussed the subject matter, emphasizing particularly the extent to which it was possible to have the man in the street know what the World Health Organization, UNICEF, FAO, ILO, and other specialized agencies are doing.

The discussions brought out clearly the interrelation of health and other activities in uniting a world where two-thirds of the human race have only one-tenth the annual income enjoyed by the one-fifth of the world's population living in Western Europe, North America, and the British Commonwealth, and have an average life span of less than half that of the citizens of these areas. To build national strength and prosperity, control of disease, increase in food supply, development of industry, and improvement in education must all be coördinated. This task is largely the task of UNESCO and other specialized agencies such as WHO, FAO, and ILO. Health programs must not only fit economic and other programs but must be patterned in relation to the country involved. It is not to be assumed that patterns which fit the United States or other Western countries can be transplanted without retailoring to fit the specific country's special needs and political genius.

Perhaps the most striking report of WHO activities concerns the organized campaigns for malaria, tuberculosis, and syphilis control. In various areas these have already increased agricultural productivity and decreased both school and industrial absenteeism.

Dr. Boudreau recommended that the $150 million a year now available for the world health program should be at least doubled, providing $1.5 billion during the next five years. Health education, according to Dr. Dent, is primarily a two way process by which local leadership participates in program planning and in accomplishing goals. Dr. Anderson stressed the importance of local training centers in various areas for public health workers to meet the particular needs of those areas.

A working paper was prepared by Professor Winslow for the American

Public Health Association as background material for the session. WHO, it noted, is an organization of 79 countries with a 1952 budget of nearly $8 million. In addition to the Geneva headquarters, there are six regional offices. Staff members total 632, including representatives assigned to more than 40 countries.

WHO's activities are summarized in three categories. World-wide "epidemiological intelligence" about current or threatened epidemics is furnished from the central statistical office. Training of public health workers is provided through scholarships and fellowships for the study of health procedures in countries other than the worker's. The third activity, said to be the most important, is direct assistance to nations in the attack on particularly urgent problems of their areas. Specialists in various fields are available for over-all guidance, and teams of the type needed are sent into a given area at the request of a government. Such technical assistance has been requested by 32 countries, largely in the East, Near East, or Central and South America.

Also on the program was a group work session of public health organizations planned by the National Health Council. This was devoted to a discussion of the need for a citizen group to foster understanding of and support for WHO. This group approved the organization of the National Citizens Committee for WHO now in process by the National Health Council. It asked each delegate to "aid in creating in his community wider understanding and interest concerning WHO." Philip E. Nelbach, associate director of the Council, served as moderator for this group.

The U. S. National Commission for UNESCO was authorized by Public Law 565 passed in the 79th Congress. It provides for appointment by the Secretary of State of not more than 60 representatives of principal national voluntary organizations interested in educational, scientific, and cultural matters, and not more than 40 other persons—10 officeholders or employees of the federal government, 15 representatives of state and local governments, and 15 persons chosen at large.

FOUR NEW STATEMENTS OF INTER-ASSOCIATION COMMITTEE ON HEALTH

The following statements have been officially adopted and released for publication as of February 1, 1952, by the six national associations constituting the Inter-Association Committee on Health, namely,

The American Dental Association
The American Hospital Association
The American Medical Association
The American Nurses' Association
The American Public Health Association
The American Public Welfare Association

Confidentiality of Public Welfare Records

It is basic to the code of ethics of the health professions that information regarding the health of a patient secured in a professional relationship must be treated as privileged and maintained in confidential status. This code of ethics applies to all individuals regardless of whether they pay for their own care, are treated under public or voluntary health auspices, or receive health care or examination as a part of the public assistance program. A large number of social case records of the public welfare agencies contain medical records and information necessary to the establishment of eligibility for assistance and/or medical services; *therefore*:

The Inter-Association Committee on Health urges that information involving health services, diagnostic information, or data by which diagnosis is made or treatment provided for recipients of public assistance, which may be contained in social case records and public assistance records, be maintained in confidential or privileged status in order that the rights of the patient be protected

and the full coöperation of the health professions assured.

Fluoridation of Public Water Supplies

Since scientific reports published 35 years ago on the prevalence of endemic dental fluorosis in the United States, evidence has accumulated demonstrating the influence of small amounts of fluoride on dental health. Too much fluoride in drinking water results in a condition known as dental fluorosis, or mottled enamel; too little is associated with a high dental caries experience rate. Between these two extremes, however, there is an optimum concentration of fluoride of about one part per million which effectively prevents a substantial amount of dental caries without causing dental fluorosis.

The problem of uncontrolled dental caries—In the average community not benefiting from fluorides in its water supply, up to 50 per cent of the two year old children have one or more carious teeth, and caries attack continues at a high rate to the extent that 95 per cent of the population is affected. Dental caries results also in considerable cost for corrective dental services throughout an individual's lifetime.

Unimpeded by preventive measures, dental caries creates a health problem of considerable magnitude because of its high rate of occurrence and its numerous sequelae that result from neglect. Dental defects thus created are accumulating at a rate four to five times faster than can be corrected by presently available dental personnel. Sound public health practice, therefore, requires a reduction in the size of the problem by the use of effective preventive measures; especially those measures which are applicable on a widespread basis and benefit all persons in the community.

Epidemiological studies—Epidemiological studies in many areas throughout the United States and abroad have shown that, within certain limits, a consistent inverse relationship exists between the fluoride content of drinking water and the amount of dental caries experience in children, particularly those using fluoride-bearing water continuously since birth. It has been found also that a concentration greater than about one part per million provides little, if any, additional benefit. As the concentration increases beyond two parts per million, an increasing number of persons has fluorosed enamel that is easily detectable. Numerous investigations have shown that people reared in areas where drinking water contains approximately one part per million of fluorine have experienced only about one-third as much dental caries as those reared in areas where the water supplies are fluorine-free. Evidence indicates also that the benefits are retained throughout life.

Studies on controlled fluoridation—Studies begun in 1945 indicate that a similar degree of protection against dental caries is found in areas where the fluoride content has been adjusted to an optimum level, as is found in areas where the same concentrations occur naturally. Statistical data show a significant reduction of dental caries in children and there is also evidence to suggest some protection to the teeth of persons who were young adults when fluoridation was undertaken. Continued observations will establish the ultimate degree of effectiveness in older age groups who used fluoridated water during childhood.

Studies on safety of fluoridation—There is extensive literature on the pharmacology and toxicology of fluorides. The reports include laboratory investigations as well as studies conducted among people who have lived continuously in areas where the drinking water contains high concentrations of fluorides.

The most sensitive indication of an adverse physiological effect of fluoride ingestion is an enamel defect known as

dental fluorosis. Accumulated experience provides no evidence that the prolonged ingestion of drinking water with a mean concentration of fluorides below the level causing dental fluorosis has any harmful effect.

A program involving the adjustment of the concentration of fluoride content in the municipal water supply is especially practical and safe because it is constantly subject to control by competent health authorities and does not require action on the part of individual citizens.

Cost and engineering aspects—The cost of fluoridation is small considering its benefits. The cost of equipment has been found to range from several hundred dollars for a small town to about $15,000 for a city of 2,500,000 persons. Annual operating costs vary from 4 to 14 cents per person. These amounts are insignificant when compared with the costs of dental corrective services throughout a person's lifetime.

According to the American Water Works Association, the addition of fluorides to a municipal water supply is feasible from an engineering standpoint. The mechanics of fluoridation are no more involved than those of water purification; moreover, the machinery and equipment commonly used in water plants is easily adapted. Through experience in towns and cities now fluoridating their drinking water, standardized procedures have been developed which include appropriate supervision by official health authorities.

Need for wider adoption of fluoridation—Although studies are still being conducted to determine the greatest amount of protection that may be realized from fluoridation, there is ample evidence to justify its use in any community where the water supply is deficient in fluorides and where the standards established by the state and local health authorities can be met.

There is evidence that the beneficial effects of fluoride-bearing water are obtained only after several years of continuous use. Every year that fluoridation is postponed many thousands of children are deprived of the dental benefits which they might otherwise have obtained.

In order that this effective, inexpensive, and safe public health measure may be adopted by additional communities as rapidly as possible, fluoridation must receive the continuing and active support of all professional, civic, and official organizations concerned with the health and welfare of the public.

National health organizations with policies favorable to fluoridation—American Dental Association, American Medical Association, American Public Health Association, American Association of Public Health Dentists, U. S. Public Health Service, National Research Council, State and Territorial Health Officers Association, and State and Territorial Dental Health Directors.

RESOLVED: that the Inter-Association Committee on Health urges the fluoridation of the fluoride-deficient public water supplies of this country as rapidly as plans can be approved by the local medical, dental, and health department officials and the state departments of health.

Health Care of Military Dependents

The Inter-Association Committee on Health is of the opinion that the health care of the dependents of military personnel constitutes a valid and important claim on the total resources of the health professions.

The Committee does not believe, however, that the Armed Forces should absorb additional professional health personnel to provide such health care for military dependents in the continental United States, except where adequate local civilian resources are not available. In view of the fact that this principle is not now being observed in

many areas, the Committee recommends that immediate study should be given to this problem by the Armed Forces and the health professions concerned.

Principles for Improvement and Better Distribution of Nursing Services

Achievement of the following objectives is essential for improvement in quality, quantity, and distribution of nursing personnel to meet civil and military nursing needs:

I. Expansion, improvement, and continuing financial support of nursing education in order (a) to attract greater numbers of qualified candidates, and (b) to prepare those nurses presently practising, as well as student nurses, to meet rapidly changing medical and social demands.

II. Intensive recruitment, both national and local, of students for schools of nursing.

III. Development of sound training programs for auxiliary nursing personnel.

IV. Mandatory licensure for nursing as an ultimate goal. As an intermediate step, mandatory licensure for professional nursing and permissive licensure for practical nursing. (No attempt will be made to require licensure of various auxiliary workers, such as nursing aides, orderlies, etc.)

V. Promotion of such economic and other conditions of employment as would attract and retain an adequate number of competent nursing personnel.

VI. Furtherance of research in nursing service practice to determine the functions of various categories of nurses so that nursing resources can be utilized more effectively.

In approving the above principles, the six component organizations of the IACH imply no agreed opinion with respect to any particular type of financial support, voluntary or governmental, and reserve their individual rights to support or oppose any particular form or source of support.

Ella Best, R.N., executive secretary of the American Nurses' Association, has succeeded Reginald M. Atwater, M.D., as secretary of the Inter-Association Committee on Health. All communications regarding this Committee should be addressed to her at 2 Park Avenue, New York 16.

FEDERAL ITEMS BUDGETED FOR HEALTH

President Truman, in presenting his budget message to the U. S. Congress, again urged federal financial support of medical and allied professional education and of local public health units.

The total budget, amounting to $85 billion, includes a budget for the Public Health Service of $302.4 million. According to an analysis by the Washington Report on the Medical Sciences, the Veterans Administration is budgeted for slightly more than $4 billion, virtually the same as the 1951–1952 total, with $696.5 million earmarked for medical and hospital services (exclusive of construction projects). The Federal Civil Defense Administration is budgeted for $600 million, nearly one-third of which would be expended for stock-piling of medical supplies and equipment. In all, it is estimated that about $2.1 billion is for medical care and public health activities, not counting the sizable but unpredictable sum to be spent next year on international health assistance under Point IV Program direction.

A new item never before budgeted is for $250,000 to assist states in establishing technical services required for the introduction of community water fluoridation programs. Grants to states for general assistance total $16.7 million, a slight increase over previous years. The Hill-Burton hospital expansion program carries $75 million as a federal contribution for new projects, the same as last year. The National Institutes of Health and component institutes are budgeted for a total of $54.8 million, an increase of $2.2 million.

STUDY OF HOSPITAL CARE FINANCING

A Commission on Financing Hospital

Care with headquarters in Chicago has been set up under the sponsorship of the American Hospital Association. The purpose of the investigation is "to study the costs of providing adequate hospital services and to determine the best systems of payment for such services."

As outlined in a prospectus released by the American Hospital Association and prepared by a Planning Committee financed by the National Foundation for Infantile Paralysis, such a study arises out of the crisis in hospital financing, the plight of the hospital patient, and public interest in the methods of financing hospital care.

The present-day hospital is a complex organization. Rapid advances in medical science require new techniques of diagnosis and treatment, more personal service, additional equipment, and increased institutional care. Much basic research in the medical sciences is done in hospitals. Hospitals are developing into the foci of health activities in their communities. Moreover, hospitals serve as training centers for health services personnel. Maintenance of the hospital has thus become increasingly a community responsibility.

These forces have combined to emphasize the importance of adequate financing for hospitals and the need for halting the rapid rise in cost of hospital care to the individual. In terms both of patients served and dollars expended, the scope of the hospital problem is increasing rapidly. Nonfederal civilian hospitals reported expenditures of about $1.4 billion in 1945, about $2.4 billion in 1948. Among nonprofit general hospitals, which reported more than two-thirds of total hospital admissions in 1948, one hospital reported an operating deficit of almost a million dollars, another of half a million. Among such hospitals reporting, expenditures exceeded patient income in two-thirds of the hospitals and total income in one-third. Charitable giving has not increased in proportion to hospital expense; payments of local and state governments for care of their wards seldom meet the full cost. Hence, paying patients must meet an increasingly larger proportion of hospital costs. Average costs per patient day for short-term illnesses increased more than 50 per cent between 1945 and 1948; in one state nearly 100 per cent, and in some hospitals 150 per cent.

The Commission has set itself the following objectives in its two year study:

1. Evaluation of the current financial position of hospitals
2. Determination of the need and demand for hospital services
3. Analysis of the effect of medical practice on hospital costs
4. Finding means of getting high-quality hospital services at the lowest possible cost
5. Evaluation of systems for payment of hospital care
6. Investigating methods of the most effective use of hospital resources
7. Making recommendations that appear desirable as a result of the study

The study, which will include all types of hospital services, with special emphasis on general hospitals, will use various methods—analysis of existing statistical data, selected sample studies, field observations of selected situations, conferences with representative authorities, and technical advisory committees in separate problem areas. A pilot study will be made in North Carolina.

The Commission is made up of 30 persons headed by Gordon Gray, president of the University of North Carolina, as chairman. Other members represent agriculture, dentistry, education, finance, government, hospitals, industry, insurance, labor, medicine, nursing, press, and religion and are drawn from the various regions of the country.

Contributors to the project's half million dollar budget include the Health Information Foundation, Milbank Memorial Fund, National Foundation for Infantile Paralysis, Rockefeller Foundation, W. K. Kellogg Foundation, and

John Hancock Mutual Life Insurance Company. The Commission operates as an independent group and will report directly to the American people. Graham Davis, formerly director, Division of Hospitals, W. K. Kellogg Foundation, is director of the study. Questions relating to the Commission and its program should be addressed to him, 1020 North Rush Street, Chicago.

NATIONAL HEALTH COUNCIL MEETS

The program of the National Health Council's annual meeting at the Hotel Roosevelt in New York City on March 13 and 14 will be devoted to a discussion of the health council idea and the interrelationships of local, state, and national health planning. Some of the findings of the Council's two year study of state and local councils will be presented at this time. Laymen and health workers active in the health council field will lead the discussions, which, together with the March 13 luncheon meeting, are open to the public. Willard L. Thorp, Assistant Secretary of State for Economic Affairs, will explore the related problems of international health in an address, "Health and Geography." The Council's exhibit, "What's in the Health Council Idea," its new membership directory, the revised version of *Stepping Stones to a Health Council*, and the new Public Affairs pamphlet, *Your Neighbor's Health Is Your Business*, will also be available for the first time.

HEALTH MUSEUM EXHIBITS TO CEYLON

The Cleveland Health Museum has duplicated seven of its exhibits for the Department of Medical and Sanitary Services, Colombo, Ceylon. These will be shown at the Colombo Plan Exhibition, which opened on February 15, 1952, to highlight the Colombo Plan and its possibilities.

The Colombo Plan was developed at a meeting of the British Commonwealth governments in London in 1950, for the economic development of South and Southeast Asia, particularly to raise the standard of living within the area. For a six year period the Commonwealth governments have provided nearly two billion pounds. Nearly one-third is intended for the development of agriculture, 18 per cent for social services such as housing, health, and education. Some of the results expected are an increase in the amount of land under cultivation and of that under irrigation; and an increase of grain food under production. By 1957 it is expected that the daily ration of cereals in India will be 16 ounces, whereas today in many towns it is 12 ounces. The Colombo Plan is written up in nontechnical language in *New Horizons in the East*, distributed by the British Information Office, 30 Rockefeller Plaza, New York 20.

RADCLIFFE POSTDOCTORAL FELLOWSHIP

Radcliffe College has announced its 8th annual Helen Putnam Fellowship. Open to women for advanced research in genetics or mental health, broadly defined to include clinical psychology and child development. The award carries a grant of $3,000 a year, with the possibility of renewal. Preference is given to those whose research is already in progress. Applications should be sent to Secretary of the Graduate School, Radcliffe College, Cambridge Mass., not later than April 1, 1952.

THE LATEST ABOUT CHEMICALS IN FOODS

The Food and Nutrition Board of the National Research Council (Washington 25, D. C.) has just published a statement, *Use of Chemical Additives in Foods*. It was prepared by the Food Protection Committee "to give some of the basic facts regarding the use of chemicals in foods and the research and legal measures now being employed by industry and government to ensure protection of the public." Among its conclusions: "There need be no hazard in

the use of chemical additives provided adequate scientific research programs are carried out prior to use." It includes a review of the functions of state and federal agencies in protecting the public both in research and in administering laws.

This informative booklet came out at about the same time that the Inter-Industry Conference on Chemicals in Foods sponsored by the Manufacturing Chemists Association was being held in New York. The papers at the Conference generally buttressed the Research Council's findings that the benefits of chemical additives outweigh their dangers. They note that without the more than 740 chemicals presently used for processing, preserving, and enriching food, the American tradition of plenty would be only a dream.

At this Conference, also, was discussed HR 2357, which would require a manufacturer to file an application and obtain permission from the Federal Security Administrator before using any substance designed to alter food in any way if that substance "is not generally recognized as having been adequately tested to show that it is not poisonous or deleterious." The Manufacturing Chemists Association presented a statement indicating that present federal laws were adequate except for a requirement that the minority who did not already do so voluntarily report to the Food and Drug Administration 60 days before the intended use of a new chemical additive to food, with information as to previous research on its hazards and toxicity.

25 YEARS OF A COMMUNITY TRUST

The 1950 report of the New York Community Trust summarizes a quarter of a century of activity during which time 100 separate funds have been deposited with it totaling resources of $100 million. The trust was set up as a depository and trusteeship for the efficient management of gifts and legacies for the purposes for which they were intended. A distribution committee receives applications and decides on grants. This committee has certain discretion in changing the direction of the funds deposited if the original need has passed. Among its ten members are Homer Folks and Norman Jolliffe, M.D.

In 1950, grants of $1,642,278 were made to 331 "payees," ranging from $5 to $822,000 and averaging just under $5,000 per agency. The largest grant went to St. Mary's Hospital for Children in New York City. More than one-third of the grants were less than $500 each, more than half were less than $1,000, and only 10 per cent were for $5,000 or more.

New York Community Trust, 250 Park Avenue, New York 17.

BROWN UNIVERSITY HONORS DR. CHAPIN

Brown University, his alma mater, has recently named one of its new dormitories Chapin House in honor of the memory of Charles V. Chapin, M.D., '76. The January, 1952, *Brown Alumni Monthly* says, "Dr. Chapin was the internationally famous authority on public health. His book on municipal sanitation was a classic, and many discoveries and reforms during his 48 years as Superintendent of Health in Providence were world-wide in their benefits. He was a Fellow of the American Academy of Arts and Sciences. The Providence City Hospital, in which he originated modern methods of treating infectious diseases, now bears his name."

Dr. Chapin joined the American Public Health Association in 1886, became a Charter Fellow in 1922, its president in 1927, and was winner of the first Sedgwick Memorial Award "for distinguished service in public health" in 1929.

AAAS SCIENCE WRITING AWARDS

At the recent annual meeting of the American Association for the Advance-

ment of Science in Philadelphia, its two annual prizes of $1,000 for the best news story and the best magazine article, respectively, on science were awarded. The newspaper award went to Victor Cohn of the Minneapolis *Tribune* for "Never Too Old," a series of articles on the problems and opportunities of old age published in January, 1951. John Lear, an associate editor of *Collier's*, won the magazine award for "Atomic Miracle" in the April 21 issue, describing medical research with nuclear reactions at Brookhaven National Laboratory. The awards are sponsored by the Westinghouse Education Foundation.

A NEW LABORATORY PERIODICAL

Laboratory Investigation, A Journal of Technical Methods and Pathology, will begin publication during the spring of 1952. Successor to the 30 year old *Bulletin of the International Association of Medical Museums*, it will be edited by a board appointed by the Council of the Association. The journal will be devoted to the publication of experimental techniques, original investigations, and observations in the basic medical sciences and will include papers on pathology, histochemistry, tissue culture, electron microscopy, radioactive tracer methods, objective teaching methods, comparative pathology, and related subjects.

Manuscripts to be considered for the journal should be sent to the editor, Thomas D. Kinney, M.D., Cleveland City Hospital, Cleveland 9. Subscriptions through the publishers, Paul B. Hoeber, Inc., 49 East 33rd Street, New York 16, at $8.00 a year.

OREGON'S HOME SAFETY PROGRAM

Because in 1950 Oregon had the nation's sixth worst accidental death record and because more than a fourth of the fatalities resulted from accidents occurring in the home, an active program in home safety is in the making in that state. The December, 1951, issue of the *Oregon Health Bulletin* is the Safety Conference Issue. It reports fully on the earlier Governor's Third Annual State Safety Conference at which for the first time home, industrial, and traffic safety workers convened in a general session.

The Conference recommended the establishment of an active home safety program in the State Board of Health, with the Governor's Committee on Home Safety as an advisory committee. "In order to make every citizen aware of his responsibility for accident prevention and to make the fullest use of individual effort, the Conference recommends the establishment of joint voluntary county and community safety committees and councils by the State Board of Health, Industrial Accident Commission, Traffic Safety Division of the Secretary of State's office, their respective advisory committees, and the State Safety Commission."

BIRD QUARANTINE RESTRICTIONS EASED

Following a Public Health Service study of the nation's psittacosis problem, newly adopted changes in federal quarantine restrictions on interstate shipments and foreign importations of members of the psittacine bird family went into effect on December 15, 1951.

The 8 month minimum age limit on birds imported for use by zoos and research institutions has been removed; the time period in which birds imported as pets must be in the owner's possession prior to entry has been reduced from 2 years to 4 months; imported pet birds need no longer be transported to the owner's residence immediately upon arrival, and an affidavit that birds imported as pets are not to be resold and that no other birds have been brought into the country as pets by the owner in the preceding year is now required.

Changes in interstate quarantine regulations went into effect on November

15. Federal restrictions are no longer placed on shipments of psittacine birds from psittacosis-free areas in the United States, and the shipment of the birds from areas where the Surgeon General of the U. S. Public Health Service has determined that psittacosis infection is dangerous to the public health is prohibited. None of the changes affects the standing requirement that interstate shipments of psittacine birds must be covered by a permit when it is required by the health department of the state of destination.

JOHN HANCOCK VISITING NURSE SERVICES TO BE DISCONTINUED

According to an announcement from Paul F. Clark, president of the John Hancock Mutual Life Insurance Company, Boston, through Sophie C. Nelson, director of the Visiting Nurse Service, it has been announced that the Company is discontinuing its Visiting Nurse Service no later than June 30, 1953. The Health Education Service is to continue.

For more than a quarter of a century John Hancock has conducted a Visiting Nurse Service for the benefit of its industrial policyholders who are confined to their homes by illness. When this service was inaugurated, certain illnesses, such as pneumonia and some other of the communicable diseases, were common causes of sickness and death. At that time infant and maternal mortality rates were higher. There was great demand for nursing care in the home. Social and economic factors contributed to this need.

The announcement points out that today the country-wide situation is very different. There has been a marked decrease in communicable diseases and a reduction in infant and maternal mortality. There are now many more services provided in hospitals and homes through increased community facilities and more services are being offered to persons of all ages through governmental agencies supported by tax funds and specialized agencies receiving support from the public. This has resulted in a diminishing demand for home nursing services supported by the Company.

Mr. Clark expressed the gratitude of the Company for the long years of friendly coöperation with local visiting nurse services. Specific details for the termination of the nursing service are available to collaborating agencies from Miss Nelson.

WORTHWHILE TO GET IN THIS SCRAP

The National Production Authority stresses the importance of the collection of all scrap metals. In many cases these scrap metals can be converted directly into new metal products; in others, they become important ingredients in the production of metal alloys for the manufacture of equipment. Charles E. Wilson, Defense Mobilizer, has stated that unless large quantities of scrap metals are made available for resmelting, both the military and civilian demands will suffer.

REGISTRY OF PATHOLOGY OF NUTRITIONAL DISEASES

A "Registry of Pathology of Nutritional Diseases" under the sponsorship of the American Institute of Nutrition has been announced. The Registry is a unit of the American Registry of Pathology of the Armed Forces Institute of Pathology in Washington, D.C., and is operated under the auspices of the Committee on Pathology of the National Research Council.

According to the announcement, the purposes of the Registry are to provide for the accumulation and maintenance of collections of pathologic materials and related case records in special fields of nutritional diseases in which it is anticipated that unknown diagnostic and prognostic criteria, as well as evaluations of various methods of treatments, can be discovered and established through mor-

phologic studies. Herbert Pollack, M.D., of New York City is chairman of the committee concerned with the Registry.

ROMAN SOCIETY OF SOCIAL MEDICINE

The Roman Society of Social Medicine was founded late in 1951 "to intensify the specific knowledge and scientific researches in the field of previdence, prevention, and assistance; to develop practical initiatives in the branch of social medicine and to promote relations between physicians and persons devoted to the above-mentioned science." Its temporary residence is Corso Vittorio Emanuele, 24-Roma; its president is Professor Giovanni L'Eltore.

HEALTH PROTECTION IN FOUNDRIES

A conference on Health Protection in Foundry Practice will be held at the University of Michigan School of Public Health, Ann Arbor, April 11 and 12. Organized in coöperation with the American Foundrymen's Society, the program will emphasize safety, hygiene, and air pollution control in the foundry industry. Although designed primarily for the foundry superintendent, the conference should be of interest to public health workers responsible for industrial hygiene programs dealing with foundries. For registration or further information, H. E. Miller, at the School.

DENTAL PUBLIC HEALTH SEMINAR

A Seminar on Dental Aspects of Public Health and Occupational Health is announced for April 10–11 by New York University. Its purpose is "to focus attention of the dental and medical professions . . . on public health and occupational health problems that are emerging in dental practice." The departments of the University involved are the Post-Graduate Medical School, the Post-Graduate Division of the College of Dentistry, and the Institute of Public Health and Industrial Dentistry, with the coöperation of the local dental societies. Alfred J. Asgis, D.D.S., assistant professor of oral surgery and lecturer on public health in the College of Dentistry, is chairman of the seminar. Tuition $25 both days, $15 one day. Apply to Dean, New York University College of Dentistry, 209 East 23rd St., New York 3.

NEW MEDICAL SCHOOL TO EMPHASIZE PUBLIC HEALTH

In an announcement regarding a proposed medical school for Yeshiva University to be located in the Bronx, New York, Harry M. Zimmerman, M.D., newly appointed director of the Medical School and currently professor of pathology at Columbia University College of Physicians and Surgeons, has announced that preventive and legal medicine will be among seven major areas to be emphasized by the new school.

According to the announcement, this medical school, building for which will start in the fall of 1952, will be the first unit of a $25 million center in the Bronx to be affiliated with a city-sponsored hospital center, the cost of which is estimated at more than $36 million. The institution will be nonsectarian and no one will be kept out because of his race, creed, color, or national origin. The school is scheduled ultimately to have a staff of 400 and a student body of the same number.

Among the seven areas in which the school expects to pioneer will be the socio-economic impacts on medicine. The curriculum will incorporate training in the principles of economics. Practical experience will be provided in the effects of family income levels and housing developments on community health.

Another feature will be an orientation of newer types of medical practice such as the home care program, with special reference to the illnesses that attend old age and to chronic disease. Medical students will be instructed in this type

of practice at Montefiore Hospital, among other institutions which have had notable success in pioneering home care. The voluntary types of group medical practice will also be explored. The school will develop a course of study of group practice and will offer seminars on the various types of prepaid medical care.

A center will be created for preventive and legal medicine. Medico-legal education will center around a "court house," which is to be built in the hospital. An attempt will be made to orient medical students as to their legal rights, duties, and responsibilities.

It is expected that the University will also offer graduate training leading to the D.D.S. degree.

PUBLIC HEALTH PESTICIDES

The National Research Council Division of Medical Sciences has prepared a selected list of pesticides important in public health activities together with the common synonyms or trade names, chemical names, formulas, and a brief notation as to mammal toxicity of each product. This brings together in compact form information presently available only in various places in the literature. Copies available from the NRC, 2101 Constitution Ave., Washington 25, D. C.

ADOPTION OF RECOMMENDED RESTAURANT ORDINANCE

A recent publication of the Public Health Service reports that there are 675 municipalities and 346 counties in 42 states and Alaska in which the Service's recommended restaurant sanitation ordinance, or one based on it, is in effect. In addition, the ordinance has been adopted by 30 states and is enforced in 20 on a state-wide basis. The states and communities involved and the dates of adoption are included in the report. Division of Sanitation, Public Health Service, Washington, D. C.

PERSONALS

HOMER ADDAMS, chairman of the board, Fitzgibbons Boiler Co., Inc., and the only living charter member of the American Society of Heating and Ventilating Engineers, received the 1951 F. Paul Anderson Medal of the Society for "outstanding work in the field of heating, ventilating and air conditioning," at the Society's 58th annual meeting in St. Louis, Mo., January 30.

THEODORE E. ALLEN, M.D.,† since 1949 assistant to the medical director, has been made associate medical director of the Arabian American Oil Company, New York City.

HERMAN G. BAITY * returned recently from a 3 month tour of duty as consultant to WHO in Geneva, where he served as sanitary engineering adviser to the European Regional Office.

LUIS MARIA BARREIRO, M.D., M.P.H., professor of hygiene and preventive medicine of the faculty of public health in Santa Fé, Argentina, with Mrs. Barreiro, is visiting in the United States on an official mission for the Ministry of Public Health of Argentina, studying cancer control and the degenerative diseases. Dr. Barreiro is a member of the Camara de Deputados, or national parliament, in Argentina.

ALBERTO PAZQUEZ BARRIERE, M.D., of Montevideo, Uruguay, was the receipient of a gold medal of the Pan American Ophthalmology Congress held in Mexico City in January, recognizing his service in advancing the science of ophthalmology.

RUTH K. BEECROFT, M.D.,† formerly in charge of the Maternal and Child Health Center, Washington, D.C., Health Department, has been appointed consultant pediatrician, Bureau of Maternal and Child Health, New York State Department of Health.

N. N. BEYHUM, M.D.,† has been appointed public health consultant to the Ministry of Interior and chief, Division of Local Health Services in the Bureau of Municipalities and Town Planning of the Ministry in Beirut, Lebanon. He has under his jurisdiction the municipal health services in incorporated Lebanese cities, towns, and villages.

BETSY B. BOYLIN, R.N.,† for the past 17 months assistant professor in public health administration, School of Hygiene and Public Health, Johns Hopkins University, has been appointed assistant director, Bureau of Public Health Nursing, New York State Department of Health.

JOHN O. BUXELL,* former deputy health commissioner in charge of sanitation, St. Louis Health Department, is environmental sani-

tation adviser, Eastern Mediterranean Regional Office of WHO in Alexandria, Egypt.

DOROTHY CRAIG,† formerly with the Health Education Division of the State Health Department, has become health educator, Phoenix (Ariz.) Health Department.

ROBERT O. CRISS, senior sanitarian, Health District III, West Virginia, has resigned to accept a position with the Orkin Exterminator Company.

CAPTAIN RT. HON. HARRY FREDERICK COMFORT CROOKSHANK, M.P., is Minister of Health in the British Cabinet under the new government elected on October 25, 1951.

BURNET M. DAVIS, M.D.,† has been appointed associate chief of the Health Branch of the Bureau of Indian Affairs, Department of the Interior, Washington, succeeding FORREST DELIEN, M.D.

JAMES P. DIXON, M.D., M.S.,* manager of the Department of Health and Hospitals, City and County of Denver, Colo., has resigned to become commissioner of health of Philadelphia and professor in the Department of Public Health and Preventive Medicine at the University of Pennsylvania School of Medicine. Dr. Dixon is the first commissioner under the newly revised City Charter of Philadelphia.

DOROTHY FAY DUNN,† formerly health educator of the East Central Region, Illinois Department of Public Health, has joined the faculty of the University of Illinois to teach undergraduate classes in public health.

MABEL EMGE, R.N., U.S. Public Health Service nurse officer, stationed at Ellis Island (N. Y.) Marine Hospital since 1949 as in-service training instructor, has been assigned to the Point IV Program in Iran, with headquarters in Teheran.

HOWARD ENNES, M.P.H.,* has been appointed executive editor of Public Health Reports, now being issued monthly by the Public Health Service after 66 annual volumes as a weekly. The new monthly also incorporates the Journal of Venereal Disease Information, the CDC Bulletion, and the Tuberculosis Control Issue of Public Health Reports.

DOROTHY ERICKSON, USPHS nurse officer, most recently detailed to a serologic survey conducted on the Navajo Reservation in Arizona for the Bureau of Indian Affairs, is in Saigon with the Mutual Security Agency mission in Indo-China.

FREDERICK K. ERICKSON,† from the faculty of Washington State College, is sanitary engineer for housing-shelter, Health and Special Weapons Defense Division, Federal Civil Defense Administrations, Washington, D. C.

RAYMOND FAGAN, D.V.M.,† Public Health Service, has left the Harvard School of Public Health to become officer in charge of an epidemiological intelligence unit, midwest Communicable Disease Center activities, at the University of Kansas Medical School, Kansas City, Kans.

STANFORD F. FARNSWORTH, M.D.,* Oakland (Calif.) health officer for the past 8 years, has resigned to become a zone representative in South America for the Pan American Sanitary Bureau, WHO Regional Office for the Americas.

OSCAR FELSENFELD, M.D.,* on a 6 month leave of absence from the Hektoen Institute for Medical Research in Chicago, is heading a party of six conducting research in salmonellosis and amebiasis in Jamaica, Mexico, Costa Rica, Colombia, Peru, and the Guianas, under the sponsorship of the Tropical Research Foundation.

ROBERTA E. FOOTE, R.N.,* who has been serving as director of public health nursing education for the Kansas State Board of Health, has been appointed director of public health nursing services.

EMIL FRANKEL, PH.D., director of the Division of Research and Statistics, New Jersey Department of Institutions and Agencies, was the first recipient of a certificate for distinguished service awarded by the New Jersey Tuberculosis League. The award was presented at the League's 45th annual meeting in Trenton, October, 1951.

FRANCIS E. GARTRELL,† previously chief of the Malaria Control Branch, Division of Health and Safety, has been appointed assistant director of health, Tennessee Valley Authority, Chattanooga.

JOSEPH H. GERBER, M.D.,† and THOMAS B. MCKNEELY, M.D.,† have exchanged their assignments as chief of the Program Operations Branch, Division of Civilian Health Requirements, Office of the Surgeon General of the Public Health Service, and chief medical officer of the Office of Vocational Rehabilitation of the FSA, respectively.

FREDERICK G. GILLICK, M.D., M.P.H.,* has been appointed dean of Creighton University School of Medicine, Omaha, Neb.

JOHN E. GORDON, M.D.,* professor of epidemiology, Harvard School of Public Health, Boston, is a member of a WHO team now visiting Burma, India, and Ceylon for the promotion of medical and public health education.

ROY O. GREEP, D.D.S., professor of dental science, has been named dean of the School of Dental Medicine, Harvard University,

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* Fellow.
† Member.

succeeding JAMES M. DUNNING, D.D.S.,† who is returning to the practice of dentistry but will remain in the School as lecturer in public health dentistry. REIDAR F. SOGNNAES, D.D.S., associate professor of dental medicine, has been made associate dean of the School.

JOHN J. HANLON, M.D.,* professor in the School of Public Health, University of Michigan, who was during the past year director of the Servicio Cooperativo Inter-Americano de Salud Publica, received a decoration from the Bolivian Government in recognition of his valuable work in that country. ANTHONY DONOVAN, M.D.,† formerly in charge of the Pan American Sanitary Bureau Regional Office in Lima, replaces Dr. Hanlon.

WILLIAM V. HARRISON, M.D., who came to the Virginia State Health Department in July, 1951, has been assigned to the Carroll-Grayson health district, with headquarters at Galax.

THOMAS A. HART, PH.D.,† Country Division Chief, T.C.A., of the Point IV Program in the Department of State, was in Egypt, Saudi-Arabia and Lebanon during 1951 as chief of a field party to review existing programs in public health and sanitation, agriculture, education, and the development of natural resources in those countries.

FREDERICK C. HEATH, M.D.,† formerly health officer, Fairfax County, Va., has been appointed assistant director of public health, District of Columbia Health Department.

ANDREW HEDMEG, M.D.,* formerly assistant director of county health work and supervisor of the field technical advisory staff, Mississippi State Board of Health, has been appointed director, Division of Preventive Medicine, Louisiana State Department of Health, New Orleans.

FRANCES A. HELLEBRANDT, M.D., formerly professor of physical medicine and director and chief, Division of Medical Research, Baruch Center of Physical Medicine and Rehabilitation, is now professor and head, Department of Physical Medicine and Rehabilitation at the University of Illinois Research and Educational Hospitals. She succeeds H. WORLEY KENDELL, M.D., who resigned to become medical director of the Institute of Physical Medicine and Rehabilitation at Peoria, Ill.

A. EDWARD A. HUDSON, PH.D.,† of North Carolina State College, Raleigh, was decorated by the President of the Republic of Cuba, with the Cuban National Order of Merit, "Carlos J. Finlay," in the grade of Commander. He was also presented with honorary membership in the Cuban Society of Public Health and elected to corresponding membership in the Cuban Society of Biology and Tropical Medicine.

HELEN A. HUNSCHER, PH.D.,* of the home economics department, Western Reserve University, Cleveland, is a member of the special advisory group of the Veterans Administration for 1952 under the chairmanship of DERRICK T. VAIL, M.D., Chicago.

KARL OESTERSKOV JENSEN, M.D., of Haslev, Denmark, who has been engaged in anti-tuberculosis work in Austria and Germany for the past year, has been appointed chief of the BCG anti-tuberculosis vaccination campaign in Egypt. He succeeds E. ROELSGAARD, M.D., now in charge of the BCG campaign in Pakistan.

ROY N. JOHNSTON, who has been acting director of the Division of Hospital Facilities, Kansas State Board of Health, since the resignation of R. M. HEILMAN, M.D.,† has been made director.

COL. PAUL A. KEENEY, M.C.,* Deputy Surgeon, First Army, on detached service at the present time as Surgeon, Exercise Snow Fall, has recently been honored by election to a direct Fellowship in the American College of Physicians.

CHRISTINE D. KIRSCHE, R.N.,† public health nurse supervisor, New Jersey State Health Department, has been ordered to active duty with the U. S. Army, assigned to Camp Ruckner, Alabama, with the rank of captain.

NELSON R. KRAEMER,† director of the Christmas Seal Sale Service of the National Tuberculosis Association, has resigned to become executive director of the Massachusetts Tuberculosis and Health League, succeeding C. W. KAMMEIER,† who is now executive secretary of the Wisconsin Anti-Tuberculosis Association.

H. L. LARSEN, M.D., of Copenhagen, Denmark, has been appointed by WHO as senior adviser to the Public Health Administration of Iran in the coördination of various international health programs now being begun there.

LT. COL. ROBERT B. LEWIS, head of the Department of Pathology, Air Force School of Aviation Medicine, San Antonio, Tex., has won the 1951 Wellcome Medal and Award given annually by the Association of Military Surgeons of the United States for his research study, "Local Cold Injury—Frostbite."

MARGARET A. LOSTY, formerly senior hospital nursing consultant, Maternity and Newborn Division, Bureau of Child Health, New York City Health Department, is director of the new Division of Nursing Services, National Foundation for Infantile Paralysis.

GRACE LUBY,† supervisor of nursing service, Kitsap-Bremerton (Wash.) Health Department, has been granted a year's leave of absence to become consultant in community nursing service, National Organization for Public Health Nursing, with headquarters in New York City.

TOM MAGRO, for 9 years a teacher of the deaf in the city school system of Appleton, Wis., has been appointed hearing consultant, Maternal and Child Health Division, Arizona State Health Department.

POLLY MATTHIS, M.P.H.,† formerly executive secretary and health educator for the Boulder and Larimer County Tuberculosis and Health Associations, Longmont, Colo., has been appointed director of program development, Colorado Tuberculosis Association, Denver.

VERA MCCORD, active in the welfare field throughout the state, is now medical services administrator, Division of Medical Services, Washington State Health Department.

ANNIE LAURIE MCELHENIE, during the past year assistant professor and director of field work, Graduate School of Social Work, Florida State University, Tallahassee, has recently become field consultant, National Midcentury Committee for Children and Youth.

EDWARD G. MCGAVRAN, M.D., M.P.H.,* dean, School of Public Health, University of North Carolina, is chairman of the Board of Editors of the new Public Health Reports, the first issue of which appeared in January, 1952.

HELEN MEISTER, R.N.,† formerly public health nursing supervisor, Labette County Health Department, Parson, is now public health nursing consultant, Kansas State Board of Health.

THELMA S. MINER, M.D., D.P.H.,† formerly medical officer of the Assiniboia region, Saskatchewan, has been appointed assistant district health officer, Middletown District Office, New York State Department of Health. She is the first Canadian appointed to a regular, permanent position by the Department under the 1951 law authorizing the naming of noncitizens to certain Health Department posts where continuing vacancies exist.

C. E. MORRIS,† who has been a field representative for the State of Washington Tuberculosis Association since 1948, has been appointed executive director, Wyoming's Society for Crippled Children and Adults, succeeding ROY DAVIDSON, who has been appointed executive director of the Colorado society at Denver.

JAMES M. MOTT, M.D.,* formerly director of the Lawrence-Douglas County Health Department has been appointed state epidemiologist and director of the Division of Epidemiology, Kansas State Board of Health. (Dr. Mott headed the County Health Department in a full-time capacity, not part-time, as stated in our October, 1951, JOURNAL.)

NORMAN B. NELSON,* formerly assistant dean of the Medical School, University of California at Los Angeles, has been appointed dean of the medical school and professor of public health, American University, Beirut, Lebanon.

ARNOLD S. NESHEIM,† formerly of the Interior Department, is now sanitary engineer for water-sewerage, Health and Special Weapons Defense Division, Federal Civil Defense Administration, Washington, D. C.

ED. NORENE † has been appointed health educator and administrative assistant, Portland (Ore.) Bureau of Health.

EDWARD O'ROURKE, M.D., M.P.H., who graduated from the Harvard School of Public Health in 1951, has recently become health commissioner of Cambridge, Mass., succeeding AUTINO FIORE, M.D.,† deceased.

H. A. PRESS, M.D.,† is on leave of absence from the Veterans Administration where he is director of program analysis in the Medical Department, to supervise the staff of the Commission on Health Needs of the Nation, recently established by the President.

NATHANIEL J. RASKIN, PH.D., has been appointed director of research, The American Foundation for the Blind, New York City.

GEORGE REID,† associate professor, Sanitary Engineering, University of Oklahoma, has also been appointed city engineer, Norman, Okla.

HARVEY ROBERTS, sanitarian, Fayette County (W. Va.) Health Department, has resigned to become industrial hygienist, Bureau of Industrial Hygiene, West Virginia State Department of Health.

ELIZABETH RYAN,† formerly health education coördinator, Chicago Board of Education, is now director of health education, Wisconsin Anti-Tuberculosis Association, succeeding RUTH J. FRANTZ,* resigned.

FLORENCE R. SABIN, M.D.,* of Denver, who was one of the recipients of a Lasker Award from the American Public Health Association at the San Francisco meeting in 1951, has recently been chosen Woman of the Year in Science by the Women's Editors of the Associated Press Newspapers.

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* Fellow.
† Member.

MIRIAM SACHS, M.D., M.P.H.,† acting chief since June, 1951, has been made chief of the Bureau of Adult and Industrial Health, New Jersey State Department of Health, succeeding MARIE SENA, M.D.,† who is now special administrator in the Office of the Commissioner, with responsibility for planning and development of civil defense, medical and health services training programs.

ROBERT SEABLOOM, previously in the Seattle City Engineer's Office, is now in the Sanitary Engineering Section, Washington State Health Department.

MARJORIE W. SPAULDING, R.N.,* until recently acting director of nursing, North Dakota State Department of Health, has been appointed regional public health nursing consultant, District VII, Public Health Service, with headquarters in Kansas City, Mo.

FRANK SPINDLER, since 1925 on the staff of the New Jersey State Department of Health, Trenton, has been named chief of the Bureau of Chemistry, succeeding JOHN E. BACON, deceased.

ARTHUR H. STEINHAUS, PH.D.,* professor of physiology, George Williams College, Chicago, left in early March for 6 weeks travel and lecture in England and Scandinavia, to be followed by visits to Germany, Helsinki, and the Olympics as part of his sabbatical leave.

MARGARET W. THOMAS, R.N.,* has been transferred from the San Francisco office of the U. S. Children's Bureau, to the Kansas City, Mo., headquarters office as regional nursing consultant.

VIRGINIA E. TORRES† has been appointed assistant in clinical research in the Section of Oncology, Yale University School of Medicine.

HENRY TURKEL, M.D.,† of Detroit, has been elected an honorary member of the Cuban Society of Public Health and a corresponding member of the Cuban Society of Biology and Tropical Medicine.

CAROLINE G. WALZ, R.N., pioneer public health nurse, who resigned after serving the people of Crow Wing County, Minn., for more than 23 years, was recently honored at a luncheon attended by the county commissioners, members of the nursing advisory board, and representatives of several community groups.

WALTER A. WERNER, M.D., has been appointed health officer of the recently established Lee-Scott Health Unit of Virginia.

GORDON B. WHEELER, M.D.,† for the past year assistant director, Division of Local Health Service, Washington State Health Department, has been assigned to the Harvard School of Public Health by the Radiological Health Branch of the Public Health Service for training in radiobiology.

RENEE ZINDWER, M.D., M.P.H.,† until recently assistant director of the School Health Service, Nashville, Tenn., is now chief of the Bureau of Maternal and Child Health, New Jersey State Health Department, succeeding JULIUS LEVY, M.D.,* retired.

ALEXANDER ZEISSIG, D.V.M.,† veterinary consultant, Bureau of Epidemiology and Communicable Disease Control, New York State Department of Health, has resigned to become director, Veterinary Section, Merck and Co., Rahway, N. J.

DEATHS

JOSEPH H. BISHOP, an associate in the Field Organization and Program Service of the National Tuberculosis Association, on December 7 at the age of 41.

R. E. BOWER, M.D.,† health commissioner, Chillicothe and Ross County Board of Health, Ohio, on November 10, 1951 (Health Officers Section).

MARY BRANSTON,† bacteriologist, Division of Laboratories, Michigan State Department of Health, on October 27, 1951 (Laboratory Section).

AUTINO FIORE, M.D.,† first health commissioner for Cambridge, Mass., and the youngest health officer in the Commonwealth, suddenly on October 21, 1951, of a heart attack (Health Officers Section).

MAJ. GEN. EDGAR ERSKINE HUME, M.C.,* U. S. Army (Laboratory Section).

OSCAR B. HUNTER, SR., M.D.,† founder and director of the Hunter Laboratories, in Washington, D. C., on December 19, 1951 (Laboratory Section).

FRANCIS I. NORRIS,† chemist with the U. S. Public Health Service, Environmental Health Center, Cincinnati, Ohio, on December 28, 1951, at the age of 36 (Laboratory Section).

ED. L. PENFRASE,† of Utica, N. Y., on November 9, 1951 (Engineering Section).

HELMAN ROSENTHAL, M.A.,† director, Associated Laboratories and Dallas Laboratories, Dallas, Tex. (Unaffiliated).

ROY SCHNEITER, PH.D.,* bacteriologist for the Division of Occupational Health, U. S. Public Health Service, assigned to the Industrial Hygiene Field Headquarters in Cincinnati, on October 15, 1951 (Laboratory Section).

CONFERENCES AND DATES

American Public Health Association. Headquarters, Public Auditorium, Cleveland, Ohio, Oct. 20–24.

Coming in March, April, May, and June:

Academy of Political Science. Hotel Astor, New York, N. Y. Apr. 24.

American Academy of General Practice. Atlantic City, N. J. Mar. 24–27.

American Academy of Political and Social Science. Benjamin Franklin Hotel, Philadelphia, Pa. Apr. 18–19.

American Association of Health, Physical Education and Recreation. Los Angeles, Calif. Apr. 6–9.

American Association of Medical Social Workers. Annual Business Meeting. Chicago, Ill. May 27.

American College of Chest Physicians. Congress Hotel, Chicago, Ill. June 5–8.

American College of Physicians. Cleveland, Ohio. Apr. 21–25.

American Congress on Obstetrics and Gynecology. Netherland Plaza Hotel, Cincinnati, Ohio. Mar. 31–Apr. 4.

American Diabetes Association. Annual Meeting. Chicago, Ill. June 7–8.

American Hearing Society. National Hearing Week. May 4–10.

American Heart Association. Hotel Statler, Cleveland, Ohio. Apr. 17–20.

American Home Economics Association. Atlantic City, N. J. June 24–27.

American Medical Association. Annual Meeting. Chicago, Ill. June 9–13.

American National Red Cross. Annual Convention. Cleveland, Ohio. June 23–26.

American Nurses' Association. Biennial Nursing Convention. Atlantic City, N. J. June 16–20.

American Physical Therapy Association. Bellevue-Stratford Hotel, Philadelphia, Pa. June 23–27.

American Psychiatric Association. Convention Hall, Atlantic City, N. J. May 12–16.

American Society for Public Administration. Hotel Statler, Washington, D. C. Mar. 7–9.

American Veterinary Medical Association. Ambassador Hotel, Atlantic City, N. J. June 23–26.

American Water Works Association:

- Annual Conference. Kansas City, Mo. May 4–9.
- Arizona Section. Maricopa Inn, Mesa. Apr. 3–5.
- Illinois Section. La Salle Hotel, Chicago. Mar. 26–28.
- Kansas Section. Salina. May 6.
- Montana Section. Northern Hotel, Billings. Apr. 11–12.
- Nebraska Section. Cornhusker Hotel, Lincoln. Apr. 17–18.
- New England Section. Hotel Statler, Boston, Mass. Mar. 20.
- New York Section. Hotel Syracuse, Syracuse. Apr. 16–18.
- Southeastern Section. Bon Air Hotel, Augusta, Ga. Mar. 24–26.

Canadian Medical Association. Banff Springs Hotel, Banff, Alberta. June 9–13.

Canadian Public Health Association. Fort Garry Hotel, Winnepeg, Manitoba. June 16–19.

Child Study Association of America. Hotel Statler, New York, N. Y. Mar. 3.

Colorado Public Health Association with Western Branch. Shirley-Savoy Hotel, Denver, Colo. June 5.

Georgia Public Health Association. Hotel Desoto, Savannah. May 5–7.

Idaho Public Health Association. Shore Lodge, McCall. Apr. 24–25.

Illinois Public Health Association. Leland Hotel, Springfield. Apr. 3–4.

Iowa Public Health Association. Fort Des Moines Hotel, Des Moines. Apr. 24–25.

Kansas Public Health Association. Town House, Kansas City. May 5–7.

Massachusetts Public Health Association. Quarterly Meeting. Boston University, Boston. Apr. 24.

Annual Meeting. University of Massachusetts Campus, Amherst. June 18–20.

Michigan Public Health Association. Statler Hotel, Detroit. May 14–16.

Middle States Public Health Association with Wisconsin Public Health Association. Hotel Schroeder, Milwaukee, Wis. Apr. 7–9.

Missouri Public Health Association. Colonial Hotel, Springfield. May 1–3.

National Conference of Social Work. Chicago, Ill. May 25–30.

National Health Council. Roosevelt Hotel, New York, N. Y. Mar. 13–14.

National League of Nursing Education. Hotel Dennis, Atlantic City, N. J. June 16–20.

National Organization for Public Health Nursing. Annual Meeting. Atlantic City, N. J. June 14–20.

National Social Hygiene Day. Apr. 23.

National Society for the Prevention of Blindness. Hotel Schenley, Pittsburgh, Pa. Mar. 19–21.

National Tuberculosis Association. Copley-Plaza Hotel, Boston, Mass. May 25–29.

New England Health Institute. University of Connecticut, Storrs, Conn. June 18–20.

New York State Public Health Association. Lake Placid, N. Y. June 3–6.

Ohio Public Health Association. Deshler-Wallick Hotel, Columbus. May 26–28.

Planned Parenthood Federation of America. Hotel Roosevelt, New York, N. Y. May 2–4.

Purdue Industrial Waste Conference (Seventh). Purdue University, Lafayette, Ind. May 7–9.

Southern Branch, A.P.H.A. Lord Baltimore Hotel, Baltimore, Md. Apr. 17–19.

Tennessee Public Health Association. Andrew Jackson Hotel, Nashville. Mar. 25–27.

United States Conference of Mayors. Waldorf-Astoria Hotel, New York, N. Y. May 15–17.

United States-Mexico Border Public Health Association. Monterrey, Nuevo Leon, Mexico. Mar. 24–27.

Western Branch, A.P.H.A. Shirley Savoy Hotel, Denver, Colo. June 3–6.

Wisconsin Public Health Association with Middle States Public Health Association. Hotel Schroeder, Milwaukee, Wis. Apr. 7–9.

"B" CONTACT SPRAY
MILL CREEK
INSECTICIDES
"R" RESIDUAL SPRAYS
SO EFFECTIVE!
Pyrethrins for quick knockdown—Hydrogenated Rotenone* for paralytic kill.
*Exclusive in Mill Creek Insecticides.
Insect Control
SO ECONOMICAL!
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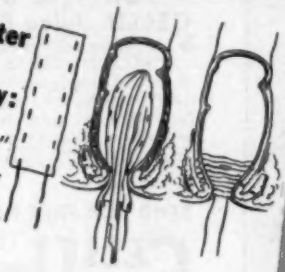

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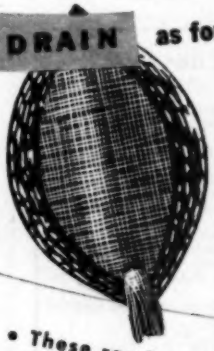

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